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ABSTRACT

The purpose of this research effort is to determine: (1) why formulas are used in the budgetary process of public higher education; (2) what organizations play an active role in the development of the formulas; (3) what strategies and counterstrategies are adopted by the participants in the formula budgeting process for public higher education; (4) what consequences derive from the organizational strategies; and (5) what functions are performed and what dysfunctions result through the application of budgetary formulas. Focus in this study is both on the historical development of budgetary formulas used in or closely related to the instructional function in California, Illinois, and Texas and on current practices. In particular, the emphasis is on the interorganizational relationships between executive and legislative budget agencies, coordinating agencies, and institutions. (Author/LBH)

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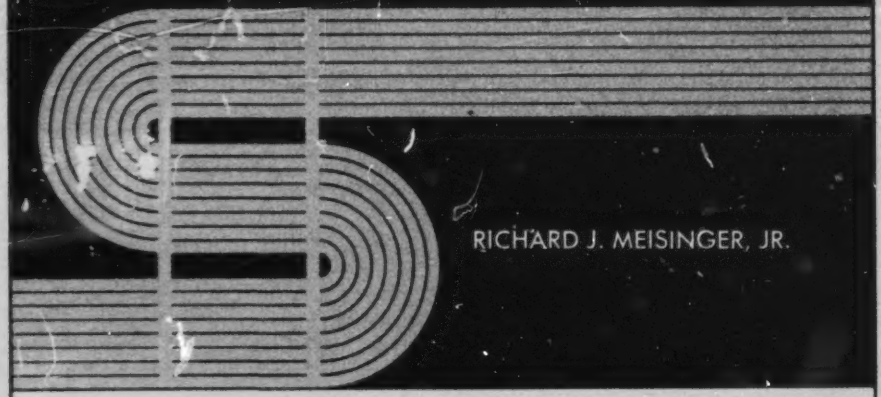

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State Budgeting for Higher Education:

The Uses of Formulas

RICHARD J. MEISINGER, JR.

CENTER FOR RESEARCH AND DEVELOPMENT IN HIGHER EDUCATION
UNIVERSITY OF CALIFORNIA, BERKELEY, 1976

Under the general title *State Budgeting for Higher Education* the Center is issuing nine publications, each with its own subtitle and authors. The volumes report three separate but interrelated projects carried on from July 1973 to August 1976, funded as follows: one on state fiscal stringency by the Fund for the Improvement of Postsecondary Education (FIPSE), another on state general revenue trends by the Lilly Endowment and the American Council on Education, and the third on selected aspects of state budgetary theory and practice by a joint grant from the National Institute for Education and the Ford Foundation. The principal investigator for all the projects was Lyman A. Glenny; the principal author or authors of each volume carried the major responsibility for it. To varying degrees, all members of the research team contributed to most of the volumes, and their contributions are mentioned in the acknowledgments. This report is the fourth to be issued in the series.

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As author of the present report, I would like to add that it owes much to a number of individuals, without whose interest and support my research would have suffered. Any deficiencies of the work are, of course, mine. For those that were avoided, I am very much indebted to these persons.

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I am also indebted to my colleagues at the Center for Research and Development in Higher Education, particularly Frank Bowen, Stewart Edelstein, Anthony Morgan, Ralph Purves, and Frank Schmidtlein, for their stimulating discussions and their willingness to critique portions of the manuscript. This collegiality has made my work more enjoyable and interesting, and has broadened my own perspectives considerably.

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Preface

From July 1973 to August 1976 three studies of state budgeting and financing of higher education were conducted by the Center for Research and Development in Higher Education at the University of California, Berkeley.

The present study began in July 1973 when the Center undertook a three-year, 50-state study of the processes used by state agencies to formulate the budgets of colleges and universities. Seventeen states were studied intensively.*

Financial support was furnished jointly by the National Institute of Education (60%) and the Ford Foundation (40%). The study was endorsed by the following organizations:

American Association of Community and Junior Colleges
American Association of State Colleges and Universities
American Council on Education
Education Commission of the States
National Association of State Budget Officers

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*The 17 states were: California, Colorado, Connecticut, Florida, Hawaii, Illinois, Kansas, Michigan, Mississippi, Nebraska, New York, Pennsylvania, Tennessee, Texas, Virginia, Washington, and Wisconsin.

National Association of State Universities and Land-Grant Colleges
National Center for Higher Education Management Systems
State Higher Education Executive Officers

Its twofold purpose is to advance budgetary theory and to give state and institutional budget professionals a broader understanding of: 1) the interrelationships, roles, functions, and objectives of the several state agencies in the budgetary process; 2) the congruence or incongruence of such objectives among the several agencies; and 3) the practices and procedures that build confidence in the fairness of the budgetary process.

Reports based on the study describe and analyze the organizational structures and staffing of state-level agencies and the progress of institutional budget requests through these agencies from the time that prebudget submission instructions are first issued by a state agency until appropriations are enacted. The primary emphasis is on the budget review and analysis process and the procedures used by the state agencies; the study concentrates on the administrative interfaces among the several state agencies that review and analyze budgets and between these agencies and the institutions, or systems of institutions, of higher education.

Intensive interviews, document review, and questionnaires in the 17 states selected formed the basis for a narrative and tabular description and comparison issued in 1975. Less detailed data were collected from 50 states by questionnaire only; these are examined and presented in a second descriptive report.

The other volumes resulting from the three-year study are analytic in nature. This volume focuses on the creation and use of budgetary formulas. Others concentrate on the cooperation, redundancy, and duplication of effort among the several state agencies that review budgets; the development and

use of information systems and analytic techniques; and the dilemmas involved in the design of budget processes, along with a step-by-step analysis of budget progress through the labyrinth of state agencies and processes.

The second study, sponsored by the Fund for the Improvement of Post-secondary Education (FIPSE), examines how state colleges and universities respond when states make substantial reductions in their appropriations. This one-year study encompasses experience with fiscal stringency in about a dozen states, primarily in the five states presented in the case studies. The latter have been brought up-to-date as of late spring 1976.

The third study, sponsored by The Lilly Endowment and the American Council on Education, analyzes the trends in state general revenue appropriations for higher education from 1968 to 1975. Refining earlier work at the Center, the study compares trends among the states for the several types of institutions in both appropriated and constant dollars, comparing dollar increases with enrollment trends in each case and also comparing dollars appropriated for higher education with those for elementary and secondary education.

Each volume resulting from the three studies draws on significant findings of the other studies yet stands alone as a complete book. However, awareness of the full panoply of social, political, and economic variables that we found in state budgeting for higher education can be gained by review of all the volumes. We earnestly hope the readers learn as much from our research as we did in conducting it. A complete list of the volumes is found on the back cover of this book.

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1.

Introduction

It is unusual for a decisionmaker not to seek some means to routinize the process of making decisions, especially in those situations which recur frequently. This need to simplify is a driving force underlying the behavior of most budgeters. Budgetmaking, a very repetitive activity, follows a cyclic pattern, usually with a period of one or two years. That is, the strongest determinant of this year's budget is last year's budget. Consequently, many of the decisions to be made this year are actually modifications of those made last year. If the budgeter can develop a decisionmaking framework which will enable him to make essentially the same kind of decision this year as last year in only a fraction of the time and with only a fraction of the effort, he will be able to make his job much simpler. The budgeter needs a decision rule which will serve as a basis for agreement in dealing with competitive interests.

The most difficult budgetary decision, obviously, is determining who gets how much. Ideally, the budgeter would like to have a decision rule which, once established, could be used every budgetary cycle to allocate resources. Such a decision rule, or formula, is being adopted by a number of states to justify budget requests from and to allocate resources to the higher education sector. A recent study indicates that formal budgetary formulas are

in use in 25 states.[1] Many more states undoubtedly employ guidelines or aids to calculation, which are in fact formulas without the stigma of rigidity attached to their labels. Some formulas were devised by institutions of higher education and submitted to the coordinating agency or governor's budget office as a proposed means of insuring an equitable distribution of state resources among all public institutions in the state. However, most states employ decision rules developed jointly by institutions, coordinating agencies, and state agencies (i.e., governor's budget office or legislative analyst's office), or rules that are imposed on institutions by state agencies and coordinating agencies.[2]

On the surface a formula appears to be nothing more than a mathematical relationship stating that under certain conditions (e.g., a level of enrollment) an institution will receive X dollars from the state. In fact, a formula is a combination of technical judgments and political agreements. Because the formula is a set of guidelines for the distribution of scarce resources among competing institutions, there is a considerable amount of self-interest reflected in its establishment and use. The political dynamics of formula budgeting is the subject of this study. The technical details of formulas are discussed only to the extent necessary to understand the strategies.

The purpose of this research effort is to determine: 1) why formulas are used in the budgetary process of public higher education, 2) what organizations play an active role in the development of the formulas, 3) what strategies and counterstrategies are adopted by the participants in the formula budgeting process for public higher education, 4) what consequences derive from the organizational strategies, and 5) what functions are performed and what dysfunctions result through the application of budgetary formulas.

This study focuses both on the historical development of budgetary formulas used in or closely related to the instructional function in California,

Illinois, and Texas, and on current practices. In particular, the emphasis is on the interorganizational relationships between executive and legislative budget agencies, coordinating agencies, and institutions. The risk of presenting detailed accounts of the development of budgetary formulas is that the reader will learn far more than he may want to know about the subject. One can argue that the risk is justified because the particular policy environment of a budgetary process together with certain assumptions about human behavior in organizations do much to explain the behavior observed.

The analytical and theoretical questions which have shaped this study are:

1. What strategies and counterstrategies are adopted by each organizational level in a higher education system which employs budgetary formulas?

   a. How do formula budgeting strategies vary with formula structure?

   b. How does formula structure vary with: 1) economic conditions, 2) political leadership, and 3) general social conditions, both within a state and across states?

2. What are the consequences of the organizational strategies and counterstrategies for uncertainty reduction and the locus of budgetary control?

   a. What is the relationship over time between formula structure and locus of control?

   b. Which factors constrain each organizational level's flexibility in the use of budgetary formulas?

   c. What is the relationship between an organization's (level's) position (i.e., as a locus of influence) and its administrative role?

d. What is the pattern of incentives and disincentives created by a formula structure for actors in the budgetary process?

3. What functions are performed and what dysfunctions result through the application of budgetary formulas?

4. What is the role of the budgetary formula in the costing and pricing of higher educational services?

FOOTNOTES

Chapter 1

[1] Gross, F.M. "A Comparative Analysis of the Existing Budget Formulas Used for Justifying Budget Requests or Allocating Funds for the Operating Expenses of State-supported Colleges and Universities." (Unpublished EdD dissertation, University of Tennessee, Knoxville, Tennessee, 1973.) A summary was published under the same title, Monography No. 9, Vol. 14. Knoxville, Tennessee: Office of Institutional Research, University of Tennessee, December 1973.

[2] This assertion is based upon a preliminary analysis of data from the State Budgeting for Higher Education project, Center for Research and Development in Higher Education, University of California, Berkeley.

2.

A Framework for the Analysis of Formula Budgeting Behavior

THE BUDGETARY FORMULA

Before outlining the study's theoretical foundation, the notion of formula needs elaboration to establish an extended meaning. A formula is defined technically as a decision rule of unspecified complexity and domain, "imposed" on institutions of higher education by state agencies and used as an aid to calculation for generating and reviewing institutional budget requests or parts thereof.[1] A budget formula can assume any number of meanings, depending on use. A formula is an aid to calculation, or decision rule, used to reduce the complexity of the budgetary process. The decision rule enables the budgeter to focus on the same key aspects of the process without having to establish a precedent or make a new decision every year. A formula is a set of assumptions on the function of organizations; that is, it is a simplified description of organizational behavior. Closely related to this meaning, a formula is a set of priorities. The structure of the formula, especially its rate schedule, represents the relative weighting of the various budgetary categories

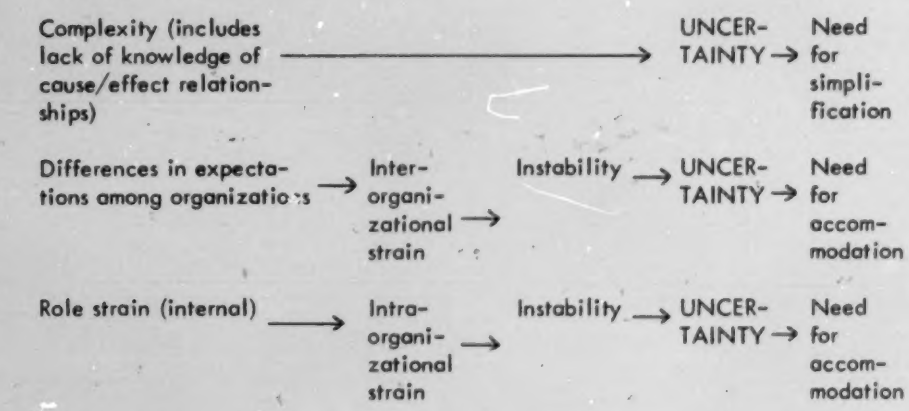
included in the formula. (In most cases the instructional-area formula is only one of several formulas used to generate the total institutional operating budget requests. However, because the operating budget is in large part comprised of instructional costs, instructional-area formulas are probably the most important of the decision rules.)

The formula can be a set of standards for institutional operation. States often aggregate data from other states with comparable systems of higher education to develop norms. A formula is sometimes a guideline for further negotiations. Because it is very difficult, if not impossible, to budget a complex organization in a changing environment by relying entirely on a set of mechanical relationships, the formula establishes the areas of discretion and the limits of debate. A formula is a type of organizational memory; it is an accumulation of past decisions, commitments, and agreements. With decisions on future actions based on past commitments, the formula also becomes a stabilizing mechanism. At the same time, the formula can be a constraint on change--the adoption of certain decision rules limits the possible alternatives.

A formula can be perceived as a contract. In return for agreeing to abide by the formula guidelines, the institutions (or lower levels) expect to receive the funding developed through the formula. Sometimes state funding agencies may expect institutions to expend funds in the same pattern used in requesting the resources. In the latter sense, a formula can be a control device. Higher-level authorities can require that lower levels allocate funds strictly in accordance with the formula framework; these same higher levels can monitor resource allocations by using the formula as an audit track. As will be later argued, the meaning of a formula depends upon its use and the user's particular strategies.

Functions Performed by Formulas

Formulas reduce the uncertainty inherent in the budget process, this uncertainty stemming from three principal sources: the complexity of the budgetary process, role conflict resulting from the differences in expectations among organizations in the higher education budgetary process, and role strain (i.e., the intraorganizational tension which results when an organization faces multiple sets of obligations) within an organization. These uncertainties can be illustrated as follows:



The formula is part of a negotiated environment. For state agencies, the formula puts dollar limits on the total institutional requests so that institutions will not "drain the state treasury"; for institutions, the formula guarantees a minimum support base.

Formulas perform four primary interrelated but separable functions which lead to uncertainty reduction for all participating organizations. First, formulas lessen the complexity of budgetary standards. Regardless of whether the coefficients in these relationships are based upon cost analyses, estimates, or normative speculation, the formula reduces budgeters' concerns for the unknown consequences of long linkages of cause-effect relationships.

Secondly, formulas serve as a means of accommodation among organizations (i.e., to reduce the strain which develops from a low degree of consensus of expectations among the organizations involved in the budgetary process). The roles which organizations assume lead to natural tension between them. Each state agency has expectations for the institutions (i.e., in terms of programs offered, audiences served, operating procedures, etc.) which are more or less at odds, at least at the margin, with those of other agencies or the institutions. The origin of much institutional uncertainty on how much to request and the state agencies' uncertainty on how much to spend is the strain between these organizations. Mutual accommodation is obtained through agreement on formulas. The degree of accommodation depends, of course, on the extent to which a formula is accepted as legitimate by all organizations in the budgetary process. Nevertheless, formulas provide an agreed-upon framework for discussion. They define the elements of the debate, including the kinds of data and analysis required. Accommodation also extends to relationships between institutions. Competition diminishes when an open, agreed-upon system of resource allocation is used. Although there will always be an unequal distribution of resources, the inequality is more readily tolerated when open, accepted, "objective" allocation rules are used.

A similar argument holds for accommodation within an organization. Uncertainty arising from an organization's difficulty in meeting its role demands can be mitigated somewhat by internal agreement on decision rules which govern a great part of the organizational behavior. The analysis of this paper will not focus specifically on uncertainty caused by organizational-role strain; rather, the framework will examine uncertainty due to differences in expectations among organizational levels as the chief ingredient of inter-organizational role conflict.

Thirdly, formulas establish the limits for the increment amount to be added to or subtracted from the budget base. How tightly these limits are defined depends on the degree of consensus on the formula structure and the degree of formula detail. Regardless of the level of specificity, the formula provides bounds for further negotiation on the size of the increment; the more detailed the formula, usually the more explicit the confines open to negotiation. Where organizations might otherwise look to their environments for indicators of limits which should be placed on the budget increment, formulas perform this function.

The fourth function of formulas is closely related to the second. Formulas become the "objective" basis for the determination of institutional "fair shares," the convergence of expectations on approximately how much each institution should receive. Again, the "fair share" is interpreted as being a bit fairer if the grounds for determination are reasonably consistent across all institutions.

FORMULA BUDGETING BEHAVIOR: ANALYTICAL ASSUMPTIONS FROM ORGANIZATION AND BUDGETARY THEORY

The behavioral model of the budgetary process to be used in this analysis is based on three principal assumptions. First, the budgeter adopts strategies to reduce the uncertainty caused by the contingencies and constraints in his working environment.[2] Secondly, the budgeter is Simon's problem-solver, working incrementally within the limits of bounded rationality.[3] Thirdly, the budgetary process for institutions of higher education takes place within the context of a system of roles very much like Wildavsky's cutter/spender dichotomy in the federal model.[4] The first two assumptions will next be examined; the third assumption concerning roles will be later analyzed in connection with the analytical variables adopted in this study.

Uncertainty Reduction

In attempting to explain formula budgeting behavior, this analysis is grounded in Thompson's organizational framework in which complex organizations are seen as "open systems, hence indeterminate and faced with uncertainty, but at the same time subject to the criteria of rationality and hence needing determinateness and certainty."[5] The premise underlying this framework is that man is very uncomfortable in uncertain situations. Consequently, it follows that most organizational actors will seek to engage in activities which reduce uncertainty, or at least make life no more uncertain. Cyert and March note that organizations tend to use simple rules and basic, simple procedures to cope with environmental conditions.[6] Simple rules are more easily learned and followed than complex ones. Furthermore, organizations tend to maintain their rules once adopted. It is not always easy to get agreement on decision rules; hence agreed-upon rules will be abandoned only in times of great stress. A formula is one example of such a decision rule. It can be simple or complicated; the important factor is whether the formula makes a complex or uncertain process any simpler or more certain. Once a formula is found to work, it will usually be maintained until environmental conditions render it a liability.

Actors in the budgetary process, whether individuals or organizations, further seek to reduce uncertainty by arranging a negotiated environment. Man is unable to anticipate, with any significant record of success, the future actions and reactions of his environment. This failure is becoming increasingly common as the individual's (or organization's) environment becomes ever more complex. The causal texture of the environment is becoming so complicated that events in parts of the environment without any direct relationship to the focal individual or organization frequently have an unexpected impact because of these unknown causal linkages. A negotiated environment reduces

somewhat the need to anticipate the reactions of others in the environment; instead, a kind of contract results whereby each organization (or individual) minimizes the impact of its actions on the other. A formula is an element of such a negotiated environment. By accepting a formula, the state budget office or coordinating agency agrees to fund, under stated conditions, institutions to the level specified in the formula. What is meant by "funding to the level specified in the formula" is, of course, subject to negotiation. The institutions can, however, be fairly certain that if conditions are met, funding within revenue constraints will follow.

A third organizational response to uncertain environmental conditions is the build-up of "organizational slack."[7] Organizational slack is the disparity between the resources available to an organization and the resources required to maintain the organization at a given level of performance. These surplus resources--in the form of time, money, or effort--are used to increase flexibility within an organization and to reduce the organization's dependence upon other organizations. Slack is an aid to calculation because it alleviates the need for "exactness" in other budgetary calculations. Furthermore, the flexibility gained through the possession of excess resources enables one to accommodate unexpected demands. Cyert and March extend this argument, indicating that slack operates to stabilize a system in two ways: " 1) by absorbing excess resources, it retards upward adjustment of aspirations during relatively good times; 2) by providing a pool of emergency resources, it permits aspirations to be maintained (and achieved) during relatively bad times."[8] In short, slack is a hedge against uncertainty. Hirschman even makes the assertion that slack is continuously being generated in all organizations and systems.[9]

Slack is an imprecise concept, usually difficult to operationalize or measure in the field. Whereas Cyert and March note "no significant evidence

for the conscious rationalization of slack in business firms" and claim that slack is unplanned, it can be argued that a significant fraction of the total organizational slack is planned in the higher education budgetary process.[10] In particular, the search for slack is an important element in formula budgeting behavior. Some slack is planned because it is easily quantified in terms of the formula. For example, the effect of a change in formula rates can be calculated to the fraction of a full-time-equivalent (FTE) faculty member. Thus, the amount of slack in terms of FTE faculty can be adjusted by altering the formula rates. The strategies embraced by the various budgetary actors to insure the availability of some slack for themselves, or to manipulate the slack of others, are to a large extent dependent on the administrative role of the actor, as will be noted in a subsequent section.

Incrementalism

Budgetary behavior tends to be largely incremental, for several reasons. Constraints of time and information restrict decisionmakers' ability to recognize and evaluate all relevant demands and resources. The announcement of long-range goals and the establishment of priorities among actors in the budgetary process is discouraged, for it might introduce conflict among various organizations or parties which might otherwise agree on a specific course of action. Also, the participants in the budgetary process simplify their task of calculation by concentrating on the relatively small parts of the budget which can be changed without unmanageable political repercussions.[11] Frequently the components of a budget will be reviewed in sequence rather than together, thereby reducing the number of items an evaluator must consider at any one time.[12]

As last year's budget includes all outstanding commitments, it is the biggest determinant of a current budget. These commitments mirror the balance of influence among the competing interests, this balance shifting slowly over

time. Most institutional activities have a claim to a share of the total higher education budget simply because they have created a set of expectations among constituent groups in the environment. That is, these activities have a perceived value to elements of the environment. Most conflicts arise from the claims made by institutions seeking changes in the existing budget. Competing institutions pose a less serious threat to one another (or to some arbiter, such as a coordinating agency or budget office) as long as incremental rather than major changes are sought. Of course, the most significant constraint on change is the set of fixed commitments already built into the budget. For example, personnel salaries consume the largest part of the budget. And like other fixed costs such as utilities and maintenance, personnel levels cannot be reduced below some minimum figure without seriously impairing the organization and creating a political backlash.

An important concept underlying uncertainty reduction strategies in the budgetary process and closely linked to incremental behavior is budget base sanctity. Budget base sanctity is the degree to which the budget base is inviolate during the budget formulation and review processes. It is a function of both the availability of state resources for higher education and the type of formula structure (i.e., "comprehensive" or "incremental"). In times of steadily growing budgets, the budget base is usually accepted as fixed by both the institution and review agencies. Most attention is therefore given to the size of the increment to the base.

Under conditions of leveling and declining resources, the budget base is more susceptible to close scrutiny. A comprehensive instructional formula creates an entirely new budget each cycle; additions to existing programs or even new programs can sometimes escape scrutiny by being hidden in the completely new budget request, assuming that a planning-programming-budgeting (PPB) format is not used. This makes budget review difficult. Therefore,

it seems that institutions will adopt certain strategies to avoid close review in order to maintain as much operational flexibility as possible. An incremental formula, on the other hand, takes the base as a given and focuses primarily on increments or decrements to the budget base in the form of new or expanded or discontinued or contracted programs or services. The assumption is that the budget base is too complex to warrant spending the time and effort required to review it. Additionally, a budget consists of a complex set of established agreements, hence the existence of a "let's not open up the whole can of worms" attitude. Given the present self-perceived understaffing of many state coordinating agencies and budget offices, the focus on increments and decrements is probably the best approach.

Incremental budgeting appears to afford participants a good opportunity to obtain an equitable share of this year's resources, for this year's distribution will usually differ only slightly from last year's. Equity is the participant's perception of "fair share." From still another perspective, it is a tolerable level of funding inequality among institutions. Here, the notion of fair share is used, as Wildavsky employs it, in a relative sense: Fair share "reflects a convergence of expectations on roughly how much the agency is to receive in comparison to others."[13]

It is hypothesized that most state formula systems were introduced for at least three important reasons: 1) to insure that all institutions received a "guaranteed" minimal level of support; 2) to avoid the costs associated with dealing with institutions on an individual basis (i.e., complaints of nonuniform treatment, development of as many strategies as institutions, etc.) by treating all institutions alike; and 3) to provide equity--the same funding for the same programs or conditions.

Closely related to equity are two other concepts: objectivity and uniformity. Objectivity is the perceived "apoliticalness" of the budget process

(the degree to which the process is neutral in terms of special interests). Uniformity of the formula is the degree to which it is applied equally to all institutions within a system and to all systems, but recognizing different functions or programs. Because it is difficult to separate these concepts operationally, in the following analysis they will be combined into a fairness image. One reason for this aggregation is that it will be unlikely that a participant who is not getting his "fair share" would admit that the process is objective or uniform.

ANALYTICAL VARIABLES

Formula budgeting behavior--the strategies and counterstrategies employed by participants in the budgetary process and the consequences of these actions--can be explained in terms of four variables: formula structure, administrative role, organizational structure, and climate.

Formula structure is the technical framework of the decision rule, including the variables and coefficients which comprise the mathematical relationships. Administrative role is the set of expectations of behavior associated with each organization in the budgetary process. The interactions between organizations characterize the organizational structure. Climate is a lumped parameter which provides a sense of a state's political leadership, economic conditions, and general social trends.

Formula Structure

Formula structure is the variable which provides the primary analytical focus of the study. Structure is the decision rule's technical framework, including the organizational parameters, the relationship between parameters and funding levels, and the data base. Once the structure is set, it becomes an important element of the context within which budgeting takes place--it is

hypothesized that formula budgeting behavior depends heavily upon formula structure.

Because the following analysis is not intended to emphasize the technical details of budget formulas, the possible variations in formula composition will be described briefly. Assuming that a formula is nothing more than a mathematical relationship, this relationship can be separated into its two constituent parts: the variables which provide the basis for the budgetary formulas and the coefficients, or rate schedules, which determine the level of funding associated with each formula. The possible variables come in all forms, the following among the most frequently used: student/faculty ratio, by level of student or level of instruction; student credit unit per weekly faculty contact hours; student credit unit per faculty FTE; unit cost, either instructional dollars per student credit unit or instructional dollars per FTE student with direct or indirect base; cost per degree; and state economic conditions (percent of state personal income).[14]

The potential bases, or points of departure, in setting coefficient levels are: historical perspective; the continuation of the current level plus or minus allowances for price and technological changes and new programs over time; interinstitutional or interstate comparisons; or response to a societal or student requirement for a particular program, with relatively less consideration of given cost factors.[15]

It is assumed that dimensions of formula structure most relevant to a subsequent classification of budgetary behavior are: the manner of formula application (i.e., comprehensive vs. incremental); the degree to which the numerical factors in the formula (e.g., unit costs or rate schedules) are negotiable; and the type of data base against which the formula is applied. These dimensions can be used to generate the following four-cell typologies.

Degree to Which Formula Numerical Factors (i.e., Rate Schedules) are Negotiable:

MANNER OF FORMULA APPLICATION	Low Negotiability	High Negotiability
Comprehensive ("Zero-base")		
Incremental ("Base-plus")		

Type of Data Base Against Which Formula is Applied:

MANNER OF FORMULA APPLICATION	Historical	Projected
Comprehensive ("Zero-base")		
Incremental ("Base-plus")		

The degree to which the formula numerical factors (i.e., rate schedules or unit costs) are negotiable is a measure of the amount of flexibility in the setting of formula rates. The type of data base against which a formula is applied is classified in one of two categories: historical or projected. The historical data base incorporates data (e.g., on enrollments or student credit hour productivity) from budgetary cycles prior to the cycle for which a request is made. If, for example, a system uses historical rates without any adjustment, the data base would be classified in the low-negotiability cell. However, a projected data base is a forecast of the cycle for which the request,

based upon historical data patterns, is made. In its simplest form, a formula rate multiplied by an element of the data base (e.g., an enrollment figure) generates the request for resources. The decision of where to locate states in the typologies is made somewhat easier by focusing on the instructional program portion of the operating budget in the following analysis.

The "manner of application" dimension refers to the formula usage in generating and reviewing budget requests. A "comprehensive" or "zero-base" instructional formula generates an entirely new instructional budget with each budgetary cycle. For example, if the formula is enrollment-driven (as most are), it is applied, in some fashion, to the total student enrollment (i.e., either projected or historical data) for that budgetary cycle to determine the resource needs for instruction. An "incremental" or "base-plus" instructional formula takes the budget base (i.e., usually last budget cycle's appropriations) as given and focuses on changes in the base. Thus, if enrollments are expected to change, or actually did change in the case of an historical data base, the formula is applied only to that enrollment change. This application will compare this year's budget with last year's budget.

Administrative Roles

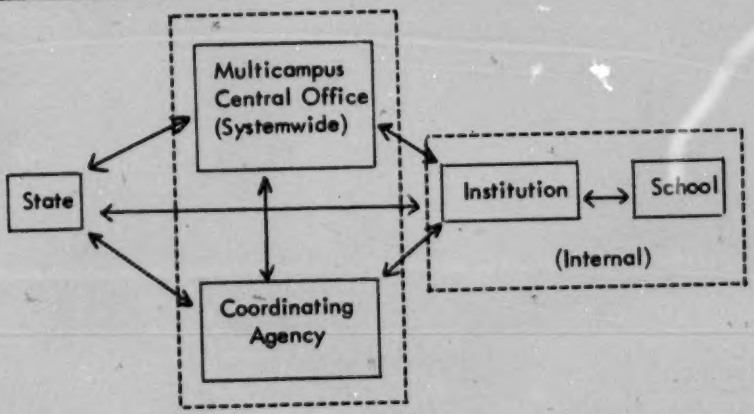
A variable which provides a secondary analytical focus is the administrative role. Wildavsky defines roles as "the expectations of behavior attached to institutional positions."[16] More generally, a role is the set of prescriptions defining what the behavior of a position member should be. Each level in the budgetary process assumes one or more characteristic roles which are determined by: the relative influence of one organization vis-a-vis the others in budgetary matters; expectations--both the organization's aggregate evaluative standards (e.g., evolving from individuals' educational background and work-related experience) and other organizations' standards; and the sanctions associated with a particular activity or behavior.[17]

A model of strategic interactions between levels which is applicable to all states is presented diagrammatically in Figure 1. The locus of interactions depends upon the positions of the actors; the basis for the differentiation of levels is, of course, functional behavior related to each actor's different mission. The state-level/institutional-level interactions (i.e., strategies, counterstrategies, and consequences) will be the focus in the states examined in the subsequent analysis. Some states do not have system headquarters or do not have coordinating agencies with significant budgetary powers. This model does not preclude the possibility of strong institutional-level/system-level or institutional-level/coordinating-agency interactions--in fact, some states have such a powerful coordinating agency that the coordinating-agency/institutional-level interactions dominate and replace the state-level/institutional-level interactions as the focus. Lastly, the institutional-level/school-level interactions occur only if the school level has some responsibility for or involvement in the application of statewide formulas.

Role characteristics are important in understanding budgetary behavior because they help to establish a stable pattern of mutual expectations among the process participants. That is, actors in the budgetary process tend to adapt their behavior to the regularized actions of others. Role behavior is an aid to calculation because it reduces the uncertainty of the process. Most actors in the budgetary process, for example, expect agencies to be spenders--they are advocates of the activities for which they are responsible and their status is proportional to how successfully they satisfy their constitutents' needs. Similarly, at least one state-level budget reviewer is expected to protect the treasury by cutting agency requests; furthermore, the reviewer's status is determined by the degree to which the expectations of his executive or legislative branch constitutents are met.

Figure 1

A Model of Strategic Interactions Between Levels in the Budgetary Process



Strategies and Counterstrategies

The interaction of role incumbents within the context of a given formula structure will determine the kinds of strategies and counterstrategies exercised by the various participants. These strategies will, in turn, yield a series of consequences in the form of either constraints or opportunities. The strategies followed are the result of organizational perceptions of environmental conditions, including the formula structure. Despite the resultant variations in strategies, several modal tendencies can be identified at each level.

The analysis of the evolution of budgetary formulas will focus on the budgetary strategies used by the various actors and on the consequences of these strategies. The theoretical concepts outlined in this section will serve as the

basis for that analysis. Why concentrate on formula budgeting strategies? The elaboration of strategies enables one to grasp the prevailing patterns of organizational interaction. Once these patterns are identified, however, they need to be explained. Another reason for examining strategies is the derived information on organizational learning--this should be especially true in formula budgeting. Organizations or levels are expected to rely on past experience to adapt to a changing environment. If a strategy has worked in the past to stablize part of the organization's (level's) environment, the chances are good that it will be used again. Of particular interest are the ways in which strategies are modified, altered, or abandoned in the face of new challenges from the environment.

Uncertainty is a variable not easily quantified. Generalizations can be made comparing feelings of certainty in various situations, but it is difficult to quantify the degree of difference. Certainty about the future consequences of present actions increases as knowledge of cause/effect relationships increases, but the exact relationship is elusive. However, it is possible to determine that reducing uncertainty can take on both positive-sum and zero-sum qualities simultaneously. That is, some strategies (e.g., the adoption of a formula or decision rule) might reduce for all participants the uncertainty inherent in the budgetary process. On the other hand, the use of the very same formula can shift the burden of the remaining uncertainty from one level to another--what is certainty for one level can create uncertainty for another.

Organizational Structure and Climate

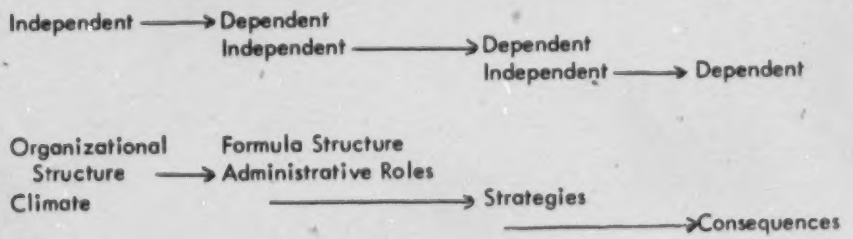
The last categories of variables to be considered fall under the rubric of organizational structure and climate. Organizational structure is the set of interactions between role occupants. As expectations change, the relationships between actors are altered and the organizational structure is modified.

Exchange relationships change with the environment, leading to changes in expectations, role definitions, and relative influence. The "climate" of a state is defined in terms of: political leadership (e.g., strong or weak governor, one party dominating the legislature); economic conditions (e.g., a treasury surplus or deficit); and general social trends (e.g., a decreasing interest in traditional forms of higher education evidenced by leveling or declining enrollments).[18] Organizational structure and any one or all of the elements of climate could potentially be responsible for either a change in formula structure or a change in administrative roles, or both.

In summary, the analytical variables assumed to explain most of the variation in formula budgeting strategies, counterstrategies, and consequences are formula structure and administrative role. A number of "exogenous" factors (lumped as climate) and organizational structure may, in turn, be responsible for changes in either of these focal sets of variables. The chain of independent and dependent variables of interest in the proposed analysis are summarized in Figure 2.

Figure 2

The Causal Chain of Independent and Dependent Variables



The actual interaction of variables is much more complex than portrayed above; in fact, there are feedback loops between all of the linkages. Moreover, formula structure might affect administrative roles and vice-versa. There is a certain amount of circularity in the link between administrative roles and strategies, because a role is often defined in terms of the strategy employed. The following analysis will attempt to isolate the interdependencies among variables by means of an historical, developmental consideration of the formula.

METHOD OF STUDY

Sample

The number of states employing budget formulas in the instructional area for institutions of higher education is not fixed because states are continually adopting and dropping formulas. Furthermore, the definition of a budget formula is a debatable issue among both practitioners and researchers alike. These two problems do in fact distort the results of the most recent survey of formula budgeting practices, which identifies 25 states using budget formulas.[19] Nonetheless, it is possible to identify "formula" states which are so classified by a number of scholars on the basis of the states' long experience with formula procedures.

California, Illinois, and Texas were chosen as the states for thorough examination. Together, these states' instructional budgetary formulas provide examples for seven of the eight cells in the formula structure typologies. All three states represent mature cases of formula budgeting: California has used two formula procedures since 1953 to budget for the California State University and Colleges system; Texas has perhaps the most all-inclusive system of budgetary formulas in the country; Illinois no longer uses a formula for the

instructional area but is a particularly interesting case due to the history behind the abandonment of the formula procedure.

Three states were selected to allow for comparisons across state environments while at the same time permitting an in-depth developmental analysis of each case. State wealth appears to have a significant impact on budgetary behavior.[20] Consequently, this variable was controlled--all three states are ranked within the top ten in the country in terms of total personal income. Moreover, the three are more supportive of public higher education in terms of tax-fund appropriations for operating expenses than are most other states.

The principal differences among the sample states are structural, thus providing a variety of administrative roles. Since 1961 Illinois has had a higher education coordinating agency with strong budgetary powers. Similarly, Texas has a strong centralized higher education agency; the Coordinating Board has no formal budgetary review authority as does the Illinois Board of Higher Education, but derives its power from its statutory responsibility to recommend funding formulas. California's statutory coordinating agency, the Coordinating Commission for Higher Education (recently recast as the Postsecondary Education Commission) is located at the other end of the "power" spectrum because historically it has not had a significant role in the budgetary process. At the state level there is also an important difference among the three cases. Both California and Illinois are considered "strong governor" states, with the executive budget office dominating the budgetary process at the state level. Texas, on the other hand, is a "strong legislature" state wherein the Legislative Budget Board is the dominant state-level budget agency.

Within each state, the study examines formula budgeting at the state, coordinating agency, university system, campus, and school levels. Rather than examining every institution in the three states, selected cases were

studied because the intrainstitutional use of formulas was only of secondary concern in the research effort.

In California, the Department of Finance and the Office of the Legislative Analyst, the California State University and Colleges system office, and the California State University, Hayward, and San Jose State University campuses were studied. The Hayward and San Jose campuses exemplify differing administrative orientations in the application of budgetary formulas internally. The formula procedures reviewed in California do not apply to the University of California, which has never had as complex a formula as the California State University and Colleges (formerly the California State Colleges).

The instructional formulas in Illinois and Texas, however, applied to all four-year institutions. In Illinois, the Bureau of the Budget and legislative fiscal staffs, the Illinois Board of Higher Education, the University of Illinois at Urbana, and Northern Illinois University were examined. Finally, in Texas the Legislative Budget Board staff and Executive Budget Office, the Coordinating Board, the University of Texas at Austin, and Southwest Texas State University were studied. In Illinois and Texas, the campuses were selected on the basis of: anticipated differences in administrative orientation between a flagship campus (as used by the Carnegie Commission to describe a system's main campus with a national reputation for excellence), and a former state teachers college; and geographical proximity to the state capitol. The selection of schools within each campus was not deemed as crucial as in the case of California because Illinois no longer uses a statewide formula, and school-level administrators in Texas have little involvement in the budgeting process itself.

Data Collection

The research approach employed to collect data included document review and intensive interviews. Document review was most valuable in reconstructing the historical development of budgetary formulas in each state. Generally, document review focused both on budget documents available to the public, including annual operating budgets for current and past years, legislative fiscal staff reports and budget messages, and on administrative records. These correspondence files, when available, were used to uncover historical trend data, positions taken, and types of analyses employed.

In addition to document review, 85 interviews were conducted with executive and staff personnel in the three states. No political figures were interviewed because the focus of the study was on staff behavior in the budgetary process. California interviewees were selected by the snowball technique: Several people familiar with the state colleges' budgetary process were interviewed and asked to list the names of other significant individuals; the process was repeated in subsequent interviews until there was a high degree of overlap in the lists of potential respondents. The majority of the interviewees in Texas and Illinois were preselected by a knowledgeable contact person in each state, although the snowball technique was also followed to insure complete coverage of the knowledgeable or influential persons. State, coordinating agency, and institutional-level respondents represented most of the interviewees. Consideration of the school level (i.e., the intrainstitutional level) was deemphasized, especially in the application of the statewide formulas at that level.

The interviews were structured around the research questions listed in in the introduction and represented a mix of the standardized interview and the nonstandardized interview.[21] That is, there were certain perceptions and information required from each respondent, but questions which

were not prespecified were also explored. In particular, once certain historical details had been confirmed in several interviews, the initial questions were replaced by different ones to elicit more information. Approximately 35 of the interviews were conducted as part of the larger study of state budgeting for higher education undertaken by the Center for Research and Development in Higher Education, University of California, Berkeley, and consequently covered a broader range of topics than just formula budgeting. Interviews ranged in length from 15 minutes to three hours, with most lasting approximately one and one-half hours.

FOOTNOTES

Chapter 2

[1] This study wishes to avoid the burden of justifying a "universal" technical definition of budgetary formula. Because the research focuses on the strategies and consequences of formula budgeting rather than on the technical details of the formulas themselves, the analysis tends to emphasize the decision rule aspects of formulas.

To operationalize this definition somewhat, the decision rule is assumed to be one developed jointly by institutions and state agencies, or one imposed on institutions by state agencies. This definition applies to states or systems in which the decision rule was developed by institutions if the formula is accepted as legitimate by state agencies. Although both institutions and state agencies employ internal formulas, the study focuses on decision rules which form the basis for interorganizational relationships. For a more technical examination of the formulas themselves, the reader is encouraged to pursue the work of James L. Miller, Jr., State Budgeting for Higher Education: The Uses of Formulas and Cost Analysis (Ann Arbor: Institute of Public Administration, The University of Michigan, 1964); Joel Price Walton, "An Analysis of the Methods Utilized by State Boards Governing Multiple Institutions of Higher Education in the Distribution of Current Operating Funds Under Their Control" (unpublished EdD dissertation, The University of Mississippi, University,

Mississippi, 1967); Wayne Julius Stumph, "A Comparative Study of Operating Budget Formulas Administered by Statewide Coordinating Agencies for Higher Education in Selected States" (unpublished PhD dissertation, Southern Illinois University, Carbondale, Illinois, 1970); Francis M. Gross, "A Comparative Analysis of the Existing Budget Formulas Used for Justifying Budget Requests or Allocating Funds for the Operating Expenses of State-Supported Colleges and Universities" (unpublished EdD dissertation, University of Tennessee, Knoxville, Tennessee, 1973). A summary of the latter study was published under the same title, Monograph No. 9, Vol. 14 (Knoxville, Tennessee: Office of Institutional Research, University of Tennessee, December 1973).

[2] Cyert, R.M. and March, J.G. A Behavioral Theory of the Firm. Englewood Cliffs, New Jersey: Prentice-Hall, 1963; Thompson, J.D. Organizations in Action. New York: McGraw-Hill, 1967.

[3] Simon, H.A. Administrative Behavior. 2nd ed. New York: Free Press, 1957.

[4] Wildavsky, A. The Politics of the Budgetary Process. Boston: Little, Brown, 1964.

[5] Thompson, Organizations in Action, p. 10.

[6] Cyert and March, A Behavioral Theory of the Firm, p. 102.

[7] Ibid., pp. 36-38.

[8] Ibid., p. 38.

[9] Hirschman, A.O. Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States. Cambridge: Harvard Press, 1970, pp. 14-15.

[10] Cyert and March, A Behavioral Theory of the Firm, p. 38.

[11] Wildavsky, A. and Hammond, A. Comprehensive versus incremental budgeting in the department of agriculture. Administrative Science Quarterly, 10 (December 1965), pp. 321-346.

[12] Harry Williams, Planning for Effective Resource Allocation in Universities. Washington, D.C.: American Council on Education, 1966 .

[13] Wildavksy, The Politics of the Budgetary Process, p. 17.

[14] Staff Committee on Alternative Budgeting Procedures for California Public Higher Education, "First Report," 1972. FTE is an abbreviation for full-time equivalent.

[15] Ibid.

[16] Wildavsky, The Politics of the Budgetary Process, p. 160.

[17] The unit of analysis used is what is termed a "level." To avoid confusion, a distinction is made between organizations and levels. The following levels will be used: state, coordinating agency, systemwide, institution, and school. The state level aggregates the governor's budget office and legislative fiscal staff; the coordinating agency level is self-explanatory; the systemwide level is the central administrative headquarters for a system of institutions, where applicable; the institutional level encompasses the top-level administrators, including academic vice president, academic planner, business vice president, and budget officer; the school level consists of deans and departmental chairmen, and their administrative assistants. The representative doctrine at each level, other than at the state level, may be thought of as that of the dominant coalition (Thompson, Organizations in Action). The level is used as the unit of analysis in discussing budget strategies because it is a more discrete unit than the organization. There will be times, however, when it is necessary to distinguish among the organizations at the state level, especially when attributing the broader roles of "cutter" and "advocate" to these agencies.

[18] The elements of climate could be considered "background" parameters if they did not change much over several budgetary cycles. These parameters will vary from state to state, however.

[19] Gross, "A Comparative Analysis of the Existing Budget Formulas Used for Justifying Budget Requests or Allocating Funds for Operating Expenses of State-supported Colleges and Universities."

[20] Wildavsky, A. Budgeting (forthcoming).

[21] Denzin, N. K. The Research Act: A Theoretical Introduction to Sociological Methods. Chicago: Aldine Publishing, 1970, pp. 124-126.

3.

Factors in the Evolution of Budgetary Formulas: The Comparative Historical Development of Formulas in California, Illinois, and Texas

The evolution of budgetary formulas in California, Illinois, and Texas centers around three principal issues: how a formula is introduced into the budgetary process, how a formula is remodeled once introduced, and what factors lead to the demise of the formula. Each issue can be studied by considering its constituent factors. Thus, to introduce a budgetary formula it is necessary to have: sources of support for the formula concept; an organizational framework for implementation; and a technological base on which to ground the formula. Similarly, to change a formula it is necessary to have: some pressure for change (arising either from sources in the environment external to the budgetary process or from sources within the system of organizational participants); an organizational framework to effect adjustments; and technological and data bases for the altered formula. Finally, factors which appear to account for the dissolution of formulas are: the condition of the

state's economy, the degree to which the formula is manipulated, and the degree to which interorganizational communications are disrupted. Each of these issues and constituent factors will now be examined in terms of the historical similarities and differences among the three cases.[1] In general, the life history of budgetary formulas tends to exhibit an incremental pattern, not a revolutionary one as might characterize PPBS, so that the issues noted above are closely linked.[2]

INTRODUCTION OF A FORMULA INTO THE BUDGETARY PROCESS

Sources of Support for Formula Concept

Although there was considerable pressure to adopt a uniform, equitable formula-base funding methodology in all three cases, the sources of this support and the underlying motivation differed: the executive budget office in California, the emerging universities in Illinois, and the University of Texas at Austin.

California. In California, the development of the weighted teaching unit (WTU) budgetary formula for the California State Colleges in the early 1950's was strongly supported by the Department of Finance with the backing of the state colleges. In 1951, when the faculty staffing formula was already under development, there were 10 state colleges, three of which were less than four years old. Nine colleges were multipurpose regional colleges (i.e., teacher education, liberal arts, and vocational training) and the tenth was an undergraduate technical college (California State Polytechnic College). Enrollments in all publicly controlled institutions of higher education had grown from 90,304 in 1940 to 145,710 in 1950.[3]

All state colleges were coordinated and governed in rather loose fashion by the Division of State Colleges and Teacher Education under the direction of the State Director of Education. The small staff of the Department of Education reviewed individual college budget requests before forwarding them to the Department of Finance. Finance had both an executive budget division, one of the largest in the country at the time, and a Division of Organization and Cost Control which conducted studies of administrative organization and management. This powerful budget office combined with a substantial legislative review of the budget by the Legislative Analyst "added up to a total pattern of centralized control over the state colleges by non-educational agencies that was exceeded in few other states."[4]

By the mid-1940's the student-faculty (S/F) ratio had evolved as the key for allocating state resources to the state colleges. However, the annual budget negotiations between the Department of Finance and the state colleges became more discordant as the weaknesses of the S/F ratio approach became more obvious. First, it was difficult to decide on an adequate ratio. Although there was a quantitative difference between a ratio of 18:1 and 20:1, it was difficult to pinpoint the difference in the classroom. Most participants agreed that the S/F ratio used should be a function of institutional size, but the exact relationship was unknown and therefore debatable. The state colleges argued that the S/F ratio should also be a function of the level of instruction, with differentiation between lower-division, upper-division, and graduate-level courses. Again, the exact nature of the relationship was uncertain. Secondly, the S/F ratio tended to encourage undue emphasis on the quantity of students enrolled rather than to stimulate concern for the quality of education. Thirdly, and closely associated with the concern for quantity, the manipulation of a ratio often resulted in automatic increases or decreases in staff which might not have been justified or desirable.[5] Finally, some administrators

in the state colleges concluded that the S/F ratio method was too simple. Because legislators could grasp its simplicity, they tended to view the ratio technique as a control device. Although some individuals within the Department of Finance sought to allow for distinctions among campuses, Finance still pushed for a uniform S/F ratio which would be applied to most state colleges.

The impetus for a change in budgeting techniques came from the Department of Finance rather than the Department of Education or the state colleges. Undoubtedly, the Department of Finance was tired of the annual debates which raged over the S/F ratio. The extremely antagonistic nature of the bargaining over S/F ratios and the pressures for uniformity also pushed the state colleges to look for new approaches to budgeting. In addition, the colleges realized that a growth era was upon them; they wanted a guaranteed minimum funding level sufficient to handle the expected growth. The executive and legislative budget offices, on the other hand, faced a higher education budget which became more unmanageable as enrollments grew and as the number of institutions and diversity of programs increased. The state-level agencies and the institutions together wanted a resource allocation procedure which would protect their interests while simultaneously reducing the interorganizational strain in the budgetary process.

The cycle of formula adoption was repeated in California some 20 years after the original WTU formula was introduced. However, in 1971, when the California State Colleges' WTU faculty staffing formula was abandoned by the Department of Finance for reasons to be discussed later, the pressures to develop a new funding methodology were somewhat different. The state colleges' central system staff (Systemwide) conceived the student credit unit per full-time equivalent faculty (SCU/FTEF) approach to reduce the uncertainty associated with the allocation of appropriated resources to the individual campuses. The

Department of Finance was more concerned with the gross allocation of resources to the system of state colleges than with allocations to individual campuses, whereas Systemwide was concerned with both. Finance had also taken an interest in faculty productivity as a result of a study conducted by a task force commissioned to examine the WTU faculty staffing procedures. Consequently, the Systemwide staff followed the task force guidelines in developing a modified formula, the SCU/FTEF concept.

Illinois. Support for budgetary formulas in Illinois came from the Illinois Board of Higher Education (IBHE) and the smaller, emerging universities in the state. When the IBHE was created in 1961, there were 79 institutions of higher education in Illinois--50 private institutions, 22 public junior colleges, six state universities, and one teachers college.[6] In fall 1961, the University of Illinois was the largest of the state universities with a student headcount enrollment of 29,811--more than double the enrollment of the next largest state university, Southern Illinois University.[7]

The IBHE was instituted to coordinate the rapidly expanding public higher education sector--in 1961, the majority of students were enrolled in public institutions, a recent shift from the earlier domination of the private sector. Moreover, the public institutions were becoming increasingly competitive; the budgetary negotiations with the Legislative Budgetary Commission were acrimonious. Each system (i.e., the University of Illinois, Southern Illinois University, and the Teachers College Board institutions--Eastern, Illinois State Normal, Western, and Northern) went directly to the legislature to explain its biennial budget needs. In particular, a heated rivalry had developed between the University of Illinois and Southern Illinois University--the University of Illinois' share of the total state appropriation for higher education operations had shrunk from 78.4

percent for the 1951-53 biennium to 61.5 percent for the 1961-63 biennium, while Southern Illinois' share had increased from 7.8 percent to 18 percent over the same period.[8] Southern Illinois University argued that it should be funded proportionately to the University of Illinois--that the large dollars/student ratio generated by dividing the total University of Illinois operating budget by the enrollment should also be used in funding Southern Illinois. However, the University of Illinois' operating budget included a significant resource flow to noninstructional areas, which tended to inflate the dollars/student ratio.

The IBHE was authorized to develop a master plan to provide for the orderly growth of higher education in Illinois and to develop a procedure for recommending higher education budgets to the legislature. Toward the latter objective the IBHE wanted a budgetary approach that would treat all institutions equitably yet be realistic in its demands on the state treasury.

The IBHE's recommendations for a new formula procedure to replace the procedures used through the 1963-65 biennium were supported by the Teachers College Board institutions. Officials in the Teachers College Board System office complained that the University of Illinois and Southern Illinois University were more liberally funded than their institutions because both the University of Illinois and Southern Illinois boards were more lenient in reviewing the institutional budget requests prior to submission to the state capital. A formula procedure supported by the IBHE was seen to provide one avenue for the smaller institutions to escape the tight-fisted fiscal control of the Teachers College Board. Moreover, a formula applied uniformly to all institutions would place the smaller institutions on a par with the University of Illinois and Southern Illinois.

Texas. In Texas, pressure for a formula system was exerted ostensibly by the legislature, the dominant force in state government. Miller describes the early historical developments:

> The form of the state budget in Texas is detailed line item for many agencies. In some cases the salaries of each position within an agency are listed individually in the budget document. This was true of positions at the colleges and universities until 1946, when, because of the confusion caused by the sudden enrollment increases following World War II, the appropriation for each college and university was made in a single lump sum. This gave the institutions much needed internal flexibility.
>
> The lump sum appropriations initiated in 1946 also created dissatisfaction. The line item detail in the budget had been the only source of objective data on the basis of which institutional operations could be appraised or interinstitutional comparisons made. With this information gone, many legislators soon became convinced that the institutions' requests were excessive, and many institutional and state officials came to believe that the division of support among the institutions was inequitable and determined largely on a basis of legislative favoritism to first one group of institutions and then another. These were the catalytic problems which brought about general agreement that a formula was needed.[9]

One reason for the highly-charged political atmosphere was the sheer number of institutions--in 1951, there were 14 separate state institutions with a total of 21 campuses, governed by nine boards.[10] A formula was seen as a means of insuring equitable treatment for this diverse assortment of institutions; it also insulated the allocation of resources from the political realm.

The institutions also supported budgetary formulas for reasons of self-interest similar to the Illinois experience. In Texas, however, the role of the flagship institutions was reversed--the University of Texas and Texas A&M were

advocates of the formula approach. They were so motivated in order to protect their Available University Fund.

The Available University Fund derives from the University of Texas' Permanent Fund. Originally, 2,100,000 acres of land were set aside in west Texas for the Board of Trustees of the University of Texas. The intention was that the land would be sold with the profits to be used as an endowment for the University. Instead of selling, the Board held the land. In 1923, oil was discovered on the property and the University of Texas began to receive the profits from the sale of oil and gas.

Under Texas statute, royalties from the sale of oil and gas are part of the corpus (i.e., the Permanent Fund), which now exceeds $650 million. The royalties cannot be spent, but can be invested. Income from the investment of the Permanent Fund is expendable (and becomes the Available University Fund) when appropriated by the legislature. The annual income is now approximately $30 million.

By agreement, Texas A&M receives one-third of the income, and the University of Texas two-thirds. Under the 1957 Texas Constitution, the institutions can use the income to pay debt service on bonds valued at up to 20 percent of the Permanent Fund. A proviso states that income unspent after debt service is paid belongs to the University of Texas at Austin only, for use in the operating budget if appropriated by the legislature. These resources are intended for "educational enrichment."

By the mid-1950's the legislature had grown accustomed to appropriating a sizeable portion of the operating funds for the University of Texas at Austin from the Available Fund. For example, on operating budgets of $10.9 million (FY 1954-55) and $12 million (FY 1955-56), the legislature appropriated $2.1 million and $1.9 million, respectively, from the Available University Fund.[11]

(For the 1957-58 fiscal year the operating budget was $14.5 million, toward which only $0.7 million was appropriated by the legislature from the Available Fund.[12]) All other institutions' operating budget requests were funded from the state General Revenue Fund or local funds.

The University of Texas argued that the appropriation of the Available Fund to cover a significant fraction of the operating budget made the Fund available, in a sense, to the entire state. Yet the University of Texas had difficulty demonstrating to the legislature what the University meant by an equitable distribution of resources among Texas institutions; the legislature asserted that the University was given more than its share of resources for the operating budget. Indeed, both the University of Texas and Texas A&M enjoyed higher teaching salaries at the graduate level than the other institutions in Texas. Another problem faced by the University of Texas was the rising expectation held by a number of institutions that they were to become "great" universities in the mold of the Austin campus. Consequently, the University of Texas supported a state coordinating commission which could control the ambitions of the other institutions. In addition, the University wanted a common budgetary framework for all institutions, in part to demonstrate that the state could not support numerous "great" institutions, and in part to discourage the legislature from using the Available Fund to finance basic costs--the Available Fund would be used "to produce excellence" on the Austin campus. Texas A&M sustained the University of Texas' recommendations because A&M, too, felt the increased competition for state resources. Finally, most of the institutions supported the formula concept because it would place them on a common footing with Texas' two most prestigious universities.

Organizational Framework for Implementation of the Formula: Task Force/Committee Structure

A problem common to all three states was that of integrating a new decisionmaking technology into the ongoing budgetary process. The task force or committee approach was a partial solution to the problem of integration; moreover, this organizational vehicle for the development and implementation of the formula concept was remarkably similar in each case. Task forces which include all participating agencies are one way to incorporate a new decisionmaking technology into an ongoing process. A new technique gains agency support and recognition through user participation, this cooperation bestowing a seal of legitimacy on the final product.

California. California organized its formula development effort around the Council of State College Presidents and deans of instruction. An agreement made in 1949 by the Department of Education and the Management Analysis Section of the Division of Budget and Accounts of the Department of Finance to conduct an administrative survey of the state colleges led to the introduction of the formula. The survey was conducted by Everett M. Chandler, associate administrative analyst in the Department of Finance's Division of Organization and Cost Control. Working alone initially and later supported by a committee of deans of instruction, Chandler reviewed all existing budgetary rules-of-thumb and standards, modified them to provide for more equitable treatment of the colleges, and presented his findings in a memorandum since known as the "Chandler Report."[13]

The Chandler Report also proposed meetings of state college presidents and deans of instruction for a five month period to refine the formula further. Chandler established the basic assumptions underpinning the staffing formula;

a committee of deans of instruction eventually led by Dr. James B. Enochs, curriculum specialist for the Division of State Colleges and Teacher Education in the Department of Education, took the Chandler outline and turned it into a working instrument. The committee's strategy was to break down the colleges' operations into a number of discrete units to be studied. This committee enlisted institutional staff for technical assistance and maintained a close working relationship with both the Departments of Finance and Education. Roy Bell of the Department of Finance worked closely with the group working out the details of the formula technique. The campus-level administrators were further incorporated into the process through trial runs of the early formula prototypes. And when serious shortcomings in the formula application threatened the success of the formula study in 1952, four subcommittees of deans were appointed to review and modify troublesome elements of the proposed formula.

This pattern of close, cooperative, interorganizational relationships was missing in California 20 years later during the introduction of SCU/FTEF formula between 1972 and 1974. The California State University and Colleges system office implemented the productivity-based concept advocated by the Department of Finance, performing most of the work at the system level. The campuses (except for implementation of system plans) and the Department of Finance had little contact with the system. This may explain why the SCU/FTEF methodology has not been accepted enthusiastically by either.

Illinois. Both Illinois and Texas utilized the participative (some would call it cooptative) strategy with great success to implement the formula concept. In late 1963 a group of high-level representatives of the three systems of higher education in Illinois discussed proposals for examining existing costs to establish reasonable budgetary standards and to set in motion the machinery for determin-

ing such costs for all campuses on a uniform basis. The organizational framework created was the Budget Formula Committee, composed of institutional representatives and Illinois Board of Higher Education (IBHE) staff; this committee dealt only with matters pertaining to operating budgets. The Budget Formula Committee membership was not formally set--each institution had official representatives on the committee but could send as many individuals as it wished. Within the context of the Budget Formula Committee, several task forces were created to develop definitions and concepts for specific areas of the budgetary process.[14] The task forces utilized committee members and institutional staff, the latter group augmenting the task forces' technical capabilities.

Layzell notes that "matters were rarely decided by formal vote. Consensus (which one later Board of Higher Education staff member defined as the absence of any loud dissent) was the normal method of reaching decisions."[15] The institutional representatives displayed some self-interest, which is certainly not atypical of committee dynamics. The politicization of the Budget Formula Committee is best described by Layzell:

> The Budget Formula Committee was considered a technical advisory committee of the Board [of Higher Education] but the term 'technical' conveys a somewhat misleading image of the work processes of the Committee. The Committee's main areas of concern, the development of formulas and unit cost studies, were technical in nature but the process by which that development took place was highly political. There was almost continual jockeying for position between institutions and the Board staff. The institutions were always concerned about misinterpretation of any fiscal data they might report especially by legislators or executive branch agencies. Consequently, great care was given to definitions of fiscal categories to minimize the chances of unfavorable comparisons. Subsequent critics claimed the process was so successful that not only could no unfavorable comparisons be made but no relevant comparisons at all could

be made, the entire process was designed to conceal rather than reveal.[16]

The Budget Formula Committee was effective precisely because there was this self-interest--it guaranteed that all important opposing points of view were represented.

Texas. Texas had a history of task force organizations prior to the introduction of its system of formulas in 1959. For example, a formula study undertaken by the then temporary Commission on Higher Education between 1951 and 1955 was structured around committees and subcommittees comprised of institutional, legislative budget office and executive budget office staff, with each committee focusing on one aspect of the operating budget. This experience set the style of operation for the development of the set of budgetary formulas first applied in the 1959-61 biennial budget--five fiscal officers from representative institutions worked under the leadership of Dr. E.L. Angell, then vice chancellor of the Texas A&M College System, as the Cost Study Committee.[17] The dynamics of the Cost Study Committee as reported by Miller are similar to those of the Illinois case:

> The work of the Cost Study Committee was reviewed first by the institution presidents and then by the [Texas] Commission [on Higher Education] staff and the Commission itself. Compromises among the institutions and between the desires of the institutions and the known desires of state officials frequently were necessary in the course of the Cost Study Committee's work in preparing the formulas. Members of the committee say that these compromises were possible because of the leverage provided by the fact that for lack of an acceptable procedure the institutions all were faring badly before the legislature. They also assert that such compromises would not have been possible if the institutions had not committed themselves wholeheartedly to cooperation and mutual trust.[18]

A crucial extension of the group activity was that Angell at Texas A&M, with Dr. F. Lanier Cox, then vice chancellor of the University of Texas, successfully convinced the other institutions, the Commission on Higher Education, and the state agencies with budgetary responsibilities of the merits of the formula concept.

Technological Base for Formula Development

The third crucial factor required for the introduction of a formula procedure is a technological base--a structure of relationships among significant system parameters and a data substructure for use in the formula. One distinctive feature of the three cases is that formulas tend to emerge from the existing decisionmaking techniques used in the budgetary process. That is, the formula concept may be new, but the implementation of the concept usually involves the same system parameters linked by modified relationships and a data base grounded in historical patterns.

California. Although the California State Colleges' WTU faculty staffing formula bore no resemblance to its predecessor, the S/F ratio, the faculty workload substructure was largely similar for both decision rules. (See Appendix A for a summary of the WTU faculty staffing formula.) The first schedule for weighting and equating faculty workloads associated with different modes of instruction was prepared in 1942. Essentially the same schedule with modifications was used 10 years later by the committee of deans of instruction in the foundation of the WTU staffing formula. The WTU formula's 12-semester unit workload standard had also been suggested prior to Chandler's review of the budgetary process. Moreover, the application of the WTU formula was based on historical trends in the class-size data for the various disciplines. The unrefined formula

in Chandler's recommendations was proposed as a means for more closely aligning budget requests with need and for providing more uniformity among institutions. Chandler suggested that a formula be used which divided the total instructional workload by the amount of work which an individual faculty member could be expected to accomplish.[19]

There was an experiential basis for the development of the formula in California. In the early 1950's, the enrollments at some of the state colleges declined as a result of the decline in enrollment of World War II veterans and the loss of male students to the Korean conflict. Several small colleges, such as Humboldt State, had to be staffed on the basis of their schedules of course offerings and classes rather than on the basis of a S/F ratio. These colleges had such small faculties (and such high S/F ratios) that they could not offer enough courses to meet even minimum curricular standards if budgeted according to a S/F ratio. Bell of the Department of Finance and the deans of instruction of the state colleges developed a minimum staffing requirement based on a minimum program in these troubled schools.

The committee of college deans and representatives of the Departments of Finance and Education met in May 1951 to study further the proposed formula. During the four-day meeting the formula was modified and tested with data from Chico State College, and the application of the formula was generally acceptable. The colleges were then given until July 1, 1951, to make a trial run of the formula on the fall 1951 class schedule.[20]

The initial trial runs were intended to show the Department of Finance that the formula would not bankrupt the state. Some of the formula trials reduced the S/F ratio by as much as one-half; consequently, the committee of deans had to modify the formula to satisfy the Department of Finance and the Legislative Auditor. There were negotiations between the state colleges and the state concerning the elements of the formula; the two sides jockeyed with

class sizes, breaking points (i.e., the size at which a class was broken into additional sections), modes of instruction, and formula coefficients. Overall, the participants felt that they had developed a reasonably objective approach to the allocation of resources.

Some delicate technical features of the formula had to be refined before the formula was accepted. The deans of instruction appointed four committees to study the four chief elements in the formula--class size, the K-factor (a weighting coefficient), the S-factor (another weighting coefficient), and approved courses.[21] In the spring of 1952, the four subcommittees made their reports, the most important aspects of which were:

1. Class size limits. In the trial application of the Chandler formula, campuses wanting to increase faculty size via the formula did so through manipulation of the class-size factors. (That is, colleges budgeted for courses using a small-size classification which provided more faculty per given number of students and hence a richer S/F ratio than a large-size classification. Once the colleges received their appropriations, they were not required to staff their courses in the same manner as budgeted. Thus, the colleges could employ large lecture classes with high S/F ratios and use the "extra" positions generated for other purposes.) The concern for misapplication of class-size factors led the Class-Size Committee to discriminate more carefully in its breakdown of course classifications. Toward this end, the committee increased the number of categories of classes in order to make the formula more realistic and abolished the maximum size for straight lecture classes.

2. K-factor. The K-factor weighted the various types of teaching activities. A study of the number of clock hours per unit of credit in a wide variety of activity and lab courses revealed a much greater uniformity among college laboratory than among activity (e.g., lecture or discussion) courses. The K-factor Committee recommended that some other bases of course classification be used for staffing purposes instead of those utilized in the original formula.

3. Approved courses. The study team proposed that a visiting committee of deans of instruction and Dr. Enochs serve in an advisory capacity to the colleges in the evaluation of their curricula and courses.[22]

The formula as modified to account for these suggestions was essentially the one first applied in FY 1952-53.

Texas. The evolution of formulas in Texas was also strongly influenced by historical patterns. A crude formula for determining faculty salary appropriations had been adopted in 1951 to reduce (successfully) the impact of political influence on the budgetary process. The Cost Study Committee working under the Texas Commission on Higher Education in 1957 developed budgetary formulas for five areas--Resident Instruction (Teaching Salaries Only), General Administration, Library, Building Maintenance, and Custodial Services--when there previously had been only the one crude formula, for Teaching Salaries Only. These formulas were first applied in the 1959-61 biennium. The new Teaching Salaries Only formula, for example, was much more sophisticated than its predecessor. The earlier salaries formula differentiated among three levels of instruction, with an average teaching salary and S/F ratio assigned to each level. The Teaching Salaries Only formula for the 1957-59 biennium, for example, with rates established by the Legislative Budget Board, is shown in Table I. The old salaries formula placed the University of Texas and Texas A&M in the "special" category at the graduate level and all other institutions in the lower-paying "general" category. The Resident Instruction (Teaching Salaries Only) formula developed by the Cost Study Committee retained the three instructional-level categories--classified as Undergraduate, Masters, and Doctoral--and disaggregated each student level into 16 disciplines.[23] A rate per semester credit hour was established for each discipline by instructional

Table I

Teaching Salaries Only Formula, 1957-59 Biennium, As Recommended by Legislative Budget Board[24]

Student Semester Credit Hours Classification	Average Teaching Salary (9 months)	Ratio Students Per Teacher	Rate Calculations	
			Per Student	Per Credit Hour
Undergraduate	$4,500	18	$250.00	$ 8.33
Graduate (general)	5,500	18	308.33	10.28
Graduate (special)	5,820	8	727.50	24.25

level where applicable (e.g., there is no undergraduate-level instruction in law).

The rates were based on teaching costs per semester credit. Because the Cost Study Committee was unable to determine the cost of teaching a semester credit hour in a discipline within Texas, it sent representatives to other states to collect relevant data on instructional budgetary practices. The Committee was able to discern certain cost patterns and relationships among disciplines and institutions within Texas, and this knowledge was sufficient, when combined with the collected comparative data, to establish the instructional rates. The rates were based on different S/F ratios and average faculty salaries for different disciplines and different levels of instruction; also, a different rate was calculated for each year of the biennium (i.e., an annual adjustment was made in average faculty salaries).[25] Both the pre-1959 prototype and the Cost Study Committee Teaching Salaries Only formula applied the rates per semester credit hour toward historical, not projected, data bases. (In each case the data base was the total projection of semester credit hours of resident instruction for the 12 months [summer, fall, and spring] immediately preceding the biennium for which resources were requested.) Thus, the Cost Study Committee had started

with a crude version of the faculty salaries formula and had made it more sensitive to an institution's program mix by differentiating among 16 subject-matter fields. The new formula data base was a blend of intrastate historical semester credit hour production patterns and interstate comparisons of S/F ratio and faculty salary standards.

The other formulas officially designated by the Texas Commission on Higher Education--General College Administration, Library, Building Maintenance, and Custodial Services--were primarily derived from "rules-of-thumb" used in previous biennia. When the Cost Study Committee concluded that certain portions of the operating budget were not susceptible to formula application, it was an indication that institutional practices in those areas were so varied that no substantive agreement could be reached on a common approach. Moreover, seasoned participants observed that the greatest problem faced in constructing the formulas was developing reasonable criteria for uniformity. Nonetheless, all of the institutional governing boards approved the formula approach to the development of institutional budgets, and all but one of the boards gave approval to the specific formulas developed.[26]

Illinois. The Illinois Board of Higher Education (IBHE), like the Texas Commission on Higher Education, did not have readily available the unit-cost data needed to support the desired formula framework, so it compromised on an interim formula for the 1965-67 biennium and undertook a thorough study of historical cost patterns in Illinois.

Formulas had been previously used for several categories of the operating budget requests, but constraints of time and staff size prevented the IBHE from reconstructing the budget request ground rules for the 1963-65 biennium (which was the IBHE's first complete budgetary cycle) to reduce the non-

uniformity in existing decision rules. Each of the three governing boards, for example, submitted requests for 1963-65 for salary adjustments based upon sharply different formulas, while the University of Illinois and Southern Illinois University and the four Teachers College Board institutions employed very different formulas to provide for increased enrollments.[27] Without sufficient data on historical cost patterns, the IBHE was in a poor position to suggest alterations in the established methodologies. Nonetheless, the IBHE staff recognized that the two larger universities performed different functions than did the others and would have higher costs attributable to the more extensive graduate, professional, and scientific training offered at the larger institutions. Consequently, the IBHE approved the requested increases generated by both formulas to cover increased enrollments, although it did approve only one salary adjustment formula.[28] But the IBHE executive director noted:

> The Illinois formulas are deficient because they yield sharply differing results and no one has been able to defend any formula adequately. We want an equitable and adequate formula and one which will be useful in carrying out the Master Plan policy matters into budgetary terms . . .[29]

The interim formula for additional enrollments for the 1965-67 biennium was a modified version of the University of Illinois formula, altered to include two graduate levels (the University of Illinois argued vigorously for the differential between first-year and advanced graduate students because the University enrolled a disproportionate number of the latter) and a disaggregation of indirect costs, as shown in Table 2. The formula factors compared favorably with data derived from institutional studies conducted in other states. The Illinois formula for additional enrollments was relatively inclusive in that it provided for more than instructional salaries by including the incidentals related to non-academic and student assistance, equipment costs, commodities, travel, library costs, and general administrative and general expense. The Texas approach, on

Table 2

Illinois Budget Formula for Additional Enrollments for 1965-67 Biennium[30]

Level	Ratio	Average Salary	Salary Per Student	General Admin.& General Expense	Library	Dept. Over-head	Total Cost Per Student
Lower Div	18:1	$ 8,000	$ 444	$164	$ 34	$ 67	$ 709
Upper Div	12:1	9,000	750	164	53	150	1,117
Grad I	9:1	10,000	1,110	164	78	278	1,630
Grad II	4:1	11,000	2,750	164	187	825	3,926

the other hand, was to construct a separate formula for some of these areas or revert to less rigorous "rules-of-thumb" for those areas not susceptible to formula treatment.

This incremental formula would have led to reductions in support of the University of Illinois' new Chicago Circle campus which had been receiving supplemental funding to cover start-up costs. As a result, some compensation was recommended by the IBHE staff.[31] The formula for additional enrollments also incorporated adjustments to compensate institutions which supported a larger-than-average number of high-cost programs. Labeled "Kentucky windage" by one observer, this negotiated factor was based upon a crude cost study conducted by the six state universities in 1960.[32] The institution (Northern Illinois University) with the lowest production of high-cost program student credit hours became the base, and received no compensation. Other institutions were compensated for high-cost programs based upon the percentage of student credit hour production in these areas over the base figure. The University of Illinois received the largest compensation, an adjustment of 14 percent.

A single formula applicable to all institutions was designed to generate

salary adjustments; the IBHE staff stressed that this formula would yield "dollar amounts that the Board can support."[33]

MODIFICATION OF BUDGETARY FORMULAS

Once a new formula procedure is assimilated into the budgetary process, it usually requires some adjustment, if for no other reason than to update the formula's data base. In general, however, such adjustments are introduced to balance pressures for equity or uniformity which were not satisfied in the initial usage, to overcome obvious flaws in technology discovered during the initial application, and to introduce conceptual and technological advancements which have occurred since the formula's inception. Thus, the factors required for formula change are: pressures for change, arising from actors in the process or from sources external to the process; some interorganizational arrangement to develop modifications and to facilitate implementation; and a data base for routine updating and, in the case of major revisions, a new formula concept.

Pressures for Formula Change

The initial application of formulas in California, Illinois, and Texas was highly successful. The state college faculty staffing requests generated by the WTU formula in California were approved as submitted; moreover, the acrimony which had traditionally characterized the submission of budget requests under the S/F ratio system was largely dissipated. The Illinois Board of Higher Education recommendations for the 1965-67 biennium were also approved as submitted, to the dollar.[34]

Texas. The Teaching Salaries Only formula developed for the Texas Commission on Higher Education was not used in 1959 by the Legislative Budget

Board to generate its recommendations; instead, the old formula was used. The timing of the Texas Commission's recommendations was such that the Legislative Budget Board did not have sufficient time to review the new formula; furthermore, the Legislative Budget Board was unwilling to support the formula at 100 percent funding. Consequently, the Board resorted to the old formula in deriving its recommendations. The level of funding actually approved was set at 93 percent of the Texas Commission's recommendations in Teaching Salaries Only (as compared with 93 percent in General College Administration and Library and 91 percent in Building Maintenance and Custodial Service).[35] The Teaching Salaries Only formula was used by the Legislative Budget Board in its review of the 1961-63 budget requests. Nonetheless, it was never intended that institutions would be funded at 100 percent of formula, but rather that available resources would be distributed equitably among the institutions.

The pressures for formula modifications grew over time, and the changes themselves were usually inducted into the process gradually. The California State Colleges altered the formula concept to accommodate changes in the instructional environment; the Illinois Board of Higher Education (IBHE) perfected a unit cost-based formula to improve the objectivity of the IBHE review and allocation scheme, whereas the Texas Commission on Higher Education revised the definition of an FTE student and devised new formulas to cover more areas (both instructional and noninstructional) of the operating budget.

California. Between 1953 and 1970, the California State Colleges sought three noteworthy changes in the faculty staffing formula or in the institutional environment within which the formula was applied. First was the adjustment of the laboratory science K-factor coefficient to give more workload credit for laboratory

instruction; the second was a differential for graduate-level instruction; and the third--unrealized--was the state support of faculty research, whereby faculty would be released from their instructional workload obligations at state expense to conduct research. The conceptual barrier to be overcome in each case was the natural tendency to resist change. Although the formula had been conceived of as a dynamic instrument, the Department of Finance feared the future dollar implications of formula modifications and opposed proposed changes. Perhaps Finance also feared the disruption of the checks and balances which had been built into the original formula framework through negotiations and trial runs to protect the individual organizations. Nevertheless, after several years of negotiations and Department of Finance backpedalling, the K-factor modification was finally approved in the FY 1957-58 and FY 1958-59 budgets. An agreement was reached in which Finance approved the change in K-factor for lab instruction under the condition that of the total number of new positions generated by the formula change, half would be requested for FY 1957-58 with the remaining positions requested for FY 1958-59.

The graduate instruction differential was proposed by the deans of graduate studies in the late 1950's, although the Department of Education resisted any immediate action in order to maintain a low profile on the issue in the first California State Colleges' Board of Trustees budget.[36] After 1961, however, the colleges' systemwide office became the advocate for enriched graduate-level instruction. Following several years of active campaigning, the systemwide office succeeded in getting the differential funded in 1967, purportedly as compensation for the lack of funding for faculty research. One must realize that the state colleges were (and still are) masters-level institutions, so that while the graduate-level instruction differential did enrich the faculty staffing, the effect was not as great as if the change had taken place in doctoral-granting institutions.

Illinois. Pressure for formula change in Illinois originated from the Board of Higher Education staff and the Budget Formula Committee and followed three parallel paths.

One interest was an accurate cost study. Crude cost studies which had been used in the 1965-67 budget as the basis for compensatory adjustments for institutions with high-cost programs were not sufficiently detailed or consistent across institutions to support the unit-cost formula designed by the Budget Formula Committee. Groundwork for a cost study had been established in 1962 by a national CPA firm which had been authorized by the IBHE to review and reclassify the financial reporting systems of the state universities to provide a comparable format. The study contributed an important historical record of expenditure trends, but additional work was needed.[37]

A second focus was the crossover from the interim S/F ratio-based formula used in the 1965-67 budget to the unit cost-based formula used in the 1967-69 and 1969-71 budget requests. The IBHE staff was under pressure to move from an incremental to a comprehensive budgeting approach. Some of the lay Board businessmen were inclined toward comprehensive budgeting, this attitude fueled by both practical business experience and the topical PPBS-comprehensive budgeting concept.

The third direction of formula change was the modification of the formula's reward structure to reduce the prestige and influence gap between the University of Illinois and Southern Illinois University on the one hand and the smaller, emerging institutions on the other. The IBHE staff determined that it could function more effectively in an environment where the interests of the University of Illinois were balanced against those of the other institutions; one element of this balance was sought through the alteration of the formula.

Texas. Advancement of the formula technology in Texas occurred at a slower pace than in Illinois because the pressure for change was not as concentrated. Nonetheless, three areas where formula changes were sought loom large. The most significant change sought in the Resident Instruction formulas was a reassessment of the basis for calculating FTE students as input to the Teaching Salaries formula. The rates for the Teaching Salaries formula were determined by the S/F ratio and the average faculty salary established for each program, by level of instruction. Prior to the 1965-67 budgetary cycle, an FTE student was defined as one carrying 15 semester credit hours, regardless of the level of student. Naturally, this across-the-board definition was partial to institutions with a predominant undergraduate orientation, and the institutions with large graduate enrollments campaigned for recognition of a lower course load for FTE graduate-level students.

Another major effort aimed at changing the financing of institutions--one that failed--was mounted in 1966 by the Coordinating Board, Texas College and University System, which replaced the Texas Commission on Higher Education in 1965. The suggested change in formula-generated state financing was not a part of the formulas themselves, but rather of the enrollment data base against which the formulas were applied. Historically, formulas for state appropriations for the institutions in Texas had been applied against actual enrollments of a given period preceding the legislative session. The Coordinating Board proposed that formula rates be applied against a projected enrollment at each college and university. Ninety percent of the resources generated would be appropriated to the institution, and 10 percent to the Coordinating Board. The Board would allocate the appropriate fraction of the remaining 10 percent to the institution once actual enrollments could be determined.[38] However, the Coordinating Board measure was not adopted; instead the governor and the Legislative Budget

Board used formulas applied against historic enrollments in preparing recommendations for the 1967-69 biennium.[39]

The third area of formula change in Texas was broader and not as dynamic as the other issues. New formulas have gradually been introduced to cover additional areas of the institutional operating budgets, yet the manner of formula application and the type of data bases used have not changed significantly since 1961.

Organizational Framework to Facilitate Formula Changes

When formula alterations are desired, there must exist an organizational arrangement to fashion and implement the changes. The quality of this organizational framework varied somewhat among the three cases.

California. A glaring weakness in California's formula approach became evident soon after its introduction: no provisions had been made for formula review and modification. Despite the close working relationship between the institutions and the Departments of Finance and Education, or perhaps for that very reason, no review procedures and organization were established. Although the state colleges and the Department of Education felt dissatisfied with certain elements of the initial formula, these organizations concealed their displeasure somewhat and won Department of Finance approval of the plan. The state college deans of instruction, coordinated by James Enoch's office in the Department of Education, pressed for the necessary changes in the faculty staffing formula. Thus this loose coalition of institutional representatives, though not formed specifically to promote formula reform, performed the same function assigned to special committees in Illinois and Texas.

Between 1958 and 1961, the organizational responsibility for monitoring the formula in California lay with the Staffing Formula Committee headquartered within the Department of Education. This committee maintained a close liaison between the state college deans of instruction and deans of graduate studies, especially in regard to the latter group's proposal for a graduate-level instruction differential. However, the close working relationship which had existed between the Departments of Finance and Education during the introductory stage of formula evolution had deteriorated badly by 1961. After the California State Colleges' system office assumed the state college coordination function from the Department of Education in 1961, responsibility for review of the staffing formula was centralized at Systemwide. But the state colleges appeared to have less opportunity for input into the review process under Systemwide than they did prior to 1961 with the Department of Education.

Illinois. One key to the Illinois Board of Higher Education's continued success with its formula-generated recommendations was the Budget Formula Committee. Although the membership changed over time, this committee provided continuity in the technical development of the formula. Moreover, the committee enhanced the open, interinstitutional exchange of ideas; performing this communications function, it fostered an atmosphere of equitable treatment which was crucial to institutional acceptance of committee and IBHE staff recommendations.

Texas. Texas, like Illinois, maintained institutional input and commitment to the formulas through a committee structure. The Cost Committee was comprised of representatives from some, but not all, of the institutions, with the larger

institutions tending to have more representation than the smaller state colleges. Technical changes and rate structures were suggested by the Cost Committee to the Texas Commission on Higher Education staff, which in turn forwarded the recommendations with or without alterations to the Commission members. For the most part, the Cost Committee met as a whole in deliberating on formula matters.

When the Coordinating Board, the successor to the Texas Commission on Higher Education, was created in 1965, the advisory council of college and university presidents under the Commission lost its statutory status; otherwise, the continuity of the formula approach was maintained. The Coordinating Board appointed advisory committees on fiscal matters for both the senior public and junior public institutions. This action fulfilled its responsibility to review all cost formulas and designate new ones, if needed, for legislative use in appropriating funds for the operation of Texas public higher education.

Since 1966 the Advisory Committee on Senior College and University Formulas has been the principal source of institutional input into the formula review process. In general, the Advisory Committee makes its recommendations each biennium to the Coordinating Board staff, which may or may not modify the recommendations before submitting them to the Coordinating Board. The Legislative Budget Board staff and the governor's budget office are informally involved in the preparation of the budgetary formulas; these informal discussions center on what "pressure points" or problem areas should be considered in the formula design. Formulas designated by the Coordinating Board are incorporated into the Legislative Budget Board and the Executive Budget Office joint instructions for budget preparation which are sent to the institutions.

In developing the formula rates for the 1971-73 and 1975-77 biennia, the Coordinating Board created Formula Study Committees for each of the existing and proposed formula areas in order to review the budgetary formulas or

evaluate the potential for formula application. Institutional representatives comprised the study committees--the review process for the 1971-73 formulas involved 72 administrators and faculty members of the Texas senior colleges and universities, insuring a reasonably complete representation of most public institutions in the process.[40] When formula study committees are used, at least one Coordinating Board staff member is assigned to each study committee as a liaison. The formula study committees make recommendations to the Advisory Committee--from that point the process continues as described previously.

Data Base and New Technologies

The third condition necessary for a formula to be modified is an extant data base and, if the change is major, a new formula concept. The greatest obstacle to formula change in California was the resistance of the Department of Finance; the hurdles that had to be overcome in Illinois and Texas were inadequacies in the existing cost data and formula technologies. Consider now the organizational responses to the various pressures for formula change in Illinois and Texas discussed previously.

Illinois. The earliest pressure in Illinois was for an improved cost data base. The cost-study plan finally adopted evolved from the outline of a model presented in 1964 during early deliberations of the Budget Formula Committee by Dr. Martin Zeigler, a University of Illinois representative. The plan was grounded upon the following principles:

1. All educational and general costs would be included in the study plus other costs as were essential to the analysis.[41]

2. Student levels would be as determined by each institution.[42]

3. Data would be actual expenditures.[43]

4. The study would include only state-appropriated funds. (The inclusion of nonstate funds would have complicated matters considerably. Moreover, the University of Illinois received most of the nonstate research funds; the committee was uncertain how to establish benchmarks--using peer groups--to compare with the University.)

5. The first cost study would run from fall 1964 to summer 1965. Future cost studies were to run from the summer of one year to the spring of the next, in accordance with the fiscal year. Summer session costs would be segregated.

6. Task forces would focus on aspects of specific areas of the budget.

Faculty statistical reports were used in allocating faculty effort to defined categories of activity. The committee justified its decision to allocate costs by level of student rather than level of course as follows:

1. When practitioners projected enrollments, they did so by student level rather than course level.

2. It is possible to construct a crossover from level of student to level of course.

3. Costs by level of student were easier to explain to the layman.

4. Course levels were rapidly changing as students became more sophisticated.

5. If costs were allocated by level of course, many courses would have to be assigned arbitrarily because both lower division and upper division students, for example, enrolled in them.

6. The cost per credit hour would have been higher using course level. (The Budget Formula Committee was afraid that the costs would appear too high.)

The Budget Formula Committee was very cautious about releasing the data from the first unit cost study for several reasons. First, some cost data were still disputed. The allocation of departmental research costs, for example, was still a bone of contention. Also, the costing procedures for the laboratory schools operated by some of the institutions had not been finalized. In general, objections to certain cost data indicated disagreement over costing procedures. The guiding principle behind the cost accounting framework was "common sense." The rules were reasonably straightforward: Determine which costs could be directly attributable to a given category and allocate those costs on a prorata basis; prorate to the categories those costs which are not directly attributable on a basis proportionate to the attributable costs incurred by the category. This procedure placed more indirect (i.e., not directly attributable) costs on the upper-division and graduate instructional levels. Secondly, the cost study was susceptible to criticism for incompleteness because it was restricted to only state funding in the operating budget areas. Federal and other nonstate funds and capital costs had been deleted because of the inherent complexity of these factors. Thirdly, there were no benchmarks which the Committee could use to determine whether or not it was "in the ballpark." In particular, the University of Illinois was concerned that it had no data comparing it with a peer group and feared that raw data provided without a comparative base might be misinterpreted.[44] Consequently, the committee members agreed that if cost data were to be released, it would be in summary form and only after thorough review by the committee.

With respect to the overall effort of the Budget Formula Committee, Layzell offers these comments:

> The Committee was not particularly innovative in the sense that it did not blaze new trails. It borrowed heavily from preexisting practices and procedures both statewide and national. It was creative, however, in its attempt to develop a common framework for requesting funds and reporting costs.[45]

Nonetheless, the cost study undertaken in Illinois was far more sophisticated than the looser "cost review" of 1957-58 which underlay the Texas formulas first used in 1959.

A second movement for formula change in Illinois sought to replace the incremental formula (i.e., the formula applied to additional enrollments) used in the 1965-67 biennial request with a comprehensive or de novo formula (i.e., a formula applied to the total enrollments), but was stymied by technical and political obstacles. The barriers to implementation of a statewide de novo formula were inadequacies in the cost study and the reluctance of the University of Illinois to shift to the proposed system.

A minor problem was that the cost study was not sufficiently refined to move ahead to a de novo budget. The study did not differentiate between the necessarily high start-up costs associated with rapidly emerging universities such as the Chicago Circle campus of the University of Illinois--a campus that had fleshed out only half of its undergraduate program, with its graduate program still in infancy--and the more incremental costs associated with increasing enrollments at established institutions. That is, the cost study had not projected the phasing out of the start-up costs. To have used this pattern of inflated unit costs as the basis for a de novo formula applied to all institutions would have distorted existing budget bases. But the Chicago Circle campus and Southern Illinois University's Edwardsville campus had been treated separately from the formula for 1965-67 and would have been so treated with the de novo formula, so that the problem was minimized.

One reason for the University of Illinois' reluctance to go to the de novo budget, and the principle obstacle to implementation, was the uncertainty of the effect on the budget base. In fact, trial uses of a de novo formula indicated that the University of Illinois would suffer a reduced base, while institutions such as Northern Illinois University would experience an expanded base because their existing base was so lean. (An administrator at the University of Illinois predicted that the Urbana campus might have lost state funding, but that this loss might have been made up at the Circle campus.) In addition, a de novo budget would have been unwieldy in the health-related services and extension area, which were budgeted largely on the basis of more subjective criteria. Staff members of the Illinois Board of Higher Education claimed that the University of Illinois had a hidden agenda guiding its opposition to the de novo budget. The hidden agenda was probably devoted in part to the use of nonstate funds; it was no secret that the University of Illinois received some "double compensation" because of its generous support from federal and other outside sources.

As a result of the barriers to the de novo budget, the IBHE staff went to a "de novo approach to the increment"--that is, the budget formula retained its incremental character. Needless to say, the emerging universities were disappointed, for they had been eager to adopt a de novo budget formula to put themselves on a funding basis more comparable to that of the University of Illinois and Southern Illinois University. But the rationale behind the IBHE staff's advocacy of the de novo budget concept--that it should be more acceptable to the legislature and governor than the incremental format--was rather shaky, because the IBHE was performing splendidly without a de novo budget in its relations with the legislative and executive branches. By this time the incremental budget approach had become too ingrained to be replaced, and the University of Illinois' opposition killed the de novo concept.

The third direction of formula change in Illinois was the modification of the formula's reward structure to balance the political clout of the University of Illinois and Southern Illinois University with that of the emerging universities. This balance was facilitated by two changes in the formula technology. First, a "catch-up" adjustment was added to the instructional-area formula to enrich the bases of lower-cost institutions to bring them closer to the statewide average.[46] Institutions found deficient in their funding base when compared to a theoretically adequate base were compensated as follows:

> After adjustment for certain applicable appropriations in the 1965-67 biennium, the funding level observed in the 1964-65 cost study at each institution was compared to a theoretically adequate base for that institution derived from all institutions which considered level of instruction, differential costs of programs, and magnitude of instructional production.
>
> Institutions found deficient in their funding base were encouraged to request a "catch-up" of one-half the adjusted deficiency in the 1967-69 biennium. Institutions observed to be funded at a level exceeding 20 percent greater than their theoretical model were to lapse (or reduce 1967-69 requests) by the "average" in excess of 20 percent.[47]

The 1969-71 Illinois budgetary formulas continued to provide adjustments in budget bases for some institutions to compensate for past deficiencies. (The 1965 General Assembly had placed the North and South branches of Illinois Teachers College [formerly Chicago Teachers College and now Northeastern Illinois University and Chicago State University respectively] under state control and had created the Board of Governors of State Colleges and Universities as the successor to the Teachers College Board.[48] Also in accord with the IBHE recommendation of Master Plan Phase II, the 1967 General Assembly created a new governing board, the Board of Regents, to oversee Northern Illinois University and Illinois State University. With four governing boards in control of

higher education, the IBHE could more easily reduce the influence of the University of Illinois and Southern Illinois University by improving the lot of the institutions under the other two governing boards at a faster rate.) However, Lyman Glenny, then executive director of the Illinois Board of Higher Education, warned the institutions that these adjustments to fit a theoretical base had to be eliminated in subsequent biennia because it was not certain how long the legislature and Department of Finance would continue to accept a procedure which inflated the average institutional costs.

Secondly, a new-program formula was introduced to cover what had been a very subjective area of budget review. The new-program area remained extremely subjective, however; new programs were used as side payments by the IBHE staff to balance competing demands, as will be detailed in Chapter 5.

Texas. The data base and formula technology were less advanced in Texas than in Illinois during the 1960's; consequently, officials in Texas often turned to the formula experience of other states as a guide to restructuring their own formula. In 1964, for example, when there was considerable pressure to change the basis for calculating FTE students at the graduate level, a subgroup of the Cost Committee conducted a tour of several states with high quality systems of higher education to study, among other things, how Resident Instruction was budgeted. The study indicated that the doctoral level in Texas suffered the severest underfunding. With this evidence the Cost Committee advocated a change to a 12 SCH load for an FTE doctoral-level student. The new weightings were accepted by the legislature, primarily because of the promotional efforts of Ray A. Fowler, acting assistant commissioner for fiscal affairs on the Texas Commission staff.

In the early 1960's the principal change in formula technology in Texas was the inclusion of new areas of the budget under the formula umbrella. This

effort usually involved a transformation of "rules-of-thumb" (which tended to reflect more the historical pattern of expenditures, possibly modified to include projections for future expenditure levels, than any relationship to other costs) into full-blown formulas. The Texas Commission proposed, for example, a more sensitive aid to calculation for determining the Departmental Operating Expense in 1963-65. Patterned after the Teaching Salaries formula, the new procedure multiplied base period semester credit hours by a schedule of rates (by program and level of instruction) to calculate the entitlement. Thus the formula reflected more closely the individual institution's program mix and quieted institutional complaints about the insensitivity of the previous approach. This new procedure was not officially designated a formula until the 1967-69 biennial budgetary process even though it was used as a rule-of-thumb for the two previous biennia.

Changes in the Texas system of formulas since the mid-1960's have primarily taken place within the existing formula framework and philosophy. These changes have occurred in three categories: developing new formulas for areas of the operating budget which had previously been budgeted on an ad hoc basis; adopting new formula variables in established formulas; and updating data bases to establish current formula rates.

During the thorough biennial review of the budgetary formulas undertaken prior to the 1971-73 biennium, formula study committees proposed several new formulas; however, either the Formula Advisory Committee or the Coordinating Board itself rejected the new models.[49] In approving formulas for the 1973-75 biennium, the Coordinating Board adopted for the first time a formula in the area of Instructional Administration (an educational function in the operating budget). An officially designated formula approved by the Coordinating Board does not have to be accepted by the Legislative Budget Board or the governor's budget office; a formula that is accepted does not have to be funded at 100

percent of the recommended rates. The legislature opted not to use the Instructional Administration formula in making appropriations for 1971-73 but adjusted incrementally the fiscal year 1970-71 appropriations to derive an acceptable level of funding. The Legislative Budget Board staff admitted it was a good formula but judged it too costly--the funding level requested for each year in the 1973-75 biennium was greater than twice the appropriations for fiscal year 1972-73 and nearly twice the amount budgeted for that same fiscal year.[50] For the 1975-77 biennium, the Coordinating Board called for the reinclusion of a formula for Instructional Administration and the addition of two new formula areas--General Institutional Expense and Grounds Maintenance.[51]

The second category of Texas formula changes since the mid-1960's is the adoption of new variables for established formulas. Although there have been no such changes in the Resident Instruction formulas (i.e., Faculty Salaries, Departmental Operating Expense, and Instructional Administration) since the mid-1960's, the changes in formula variables for General Administration and Student Services provide a good example of this second category of change. The recommended formula for the 1975-77 biennium is presented in Table 3. The principal formula variable was changed to headcount enrollment (rate per student) from semester credit hours (rate per semester credit hour) in the 1967-69 budget because the rate per student afforded a more realistic picture of institutional needs in the general administration and student services area. Certainly, the new variable favors institutions which attract more part-time students than the average, yet the formula has proved satisfactory for most colleges and universities.

The "percentage of sponsored research" element of the formula was added in 1965-67 to compensate the large research-oriented institutions (e.g., the University of Texas and Texas A&M) for the considerable administrative costs of research-related activities. This formula factor has a dollar impact for the large

Table 3

Texas Coordinating Board Recommended Formula for General Administration and Student Services[52]
(Public Senior Colleges and Universities, 1975-77 Biennium)

Full Semester Headcount Enrollment	Rate Per Headcount Enrollment Fiscal 1976	Fiscal 1977
First 4,000	$122.01	$129.33
Next 4,000	91.01	96.47
Above 8,000	81.99	86.91
Fiscal Year 1975 Educational and General Appropriation Exclusive of Appropriation for General Administration and Student Services	**Fiscal 1976**	**Fiscal 1977**
Institutional Total	1.0%	1.0%

(Fall Semester 1974 headcount enrollment times the above rates plus 7-1/2% of sponsored research funds expended during fiscal 1974 plus the above percentages of total Educational and General Appropriations for fiscal 1975 exclusive of General Administration and Student Services.)

institutions only. Finally, the factor for the percentages of Total Educational and General Appropriations was added in 1971-73 at the behest of several smaller institutions which complained that their enrollments were too low--below a critical mass--to generate sufficient resources to meet actual costs for general administration and student services. The formula study committee which suggested this third factor prior to the 1971-73 budgetary cycle noted that the advantages of using a percentage of appropriated Educational and General Budget are: administrative work not related to headcount enrollment is recognized; the use of the appropriated budget level is a definite and auditable amount; the existing formula is kept intact because the factor adds to rather than replaces the existing formula; and there is an automatic escalation feature.[53] However,

the legislature has not accepted this last factor in making its appropriation but relies instead upon the previous funding level to base its decisions.

This account of the slow evolution of the General Administration and Student Services formula illustrates several outstanding features of the Texas formula system. First, the budgetary formulas are in fact snapshots of historical patterns of resource distribution; the alteration of existing formulas is performed to maintain as closely as possible the current allocation pattern. In this sense the formula elements are more rules-of-thumb than representative of actual unit costs. Secondly, the historical pattern of funding levels is adhered to closely by the legislature in making its appropriations. Finally, one observes a definite statewide concern for "balance" whereby institutions hold positions of status quo relative to one another and are not openly jockeying for improved positions vis-a-vis the other institutions as usually occurs in most budgetary processes.

The third and most common category of formula changes in Texas is updating the data bases for the formula rate schedules. The thoroughness of the formula review depends on the membership of the individual formula study committees, if such committees are employed, or of the Formula Advisory Committee. During the concerted restudy of the Texas budgetary formulas prior to the 1971-73 biennium, the Faculty Salaries Formula Study Committee, for example, headed by Dr. F. Lanier Cox of the University of Texas at Austin, made a thorough study of the existing formula and recommended extensive revisions in the entire rate structure. A brief examination of this committee's efforts reveals some of the considerations and political interplay involved in the rethinking of an existing resource allocation scheme.

The Faculty Salaries Committee first investigated the feasibility of breaking down the composite undergraduate rates into lower-division and upper-division categories. Also considered was the development of a composite graduate formula rate for each program leading to a doctoral degree to be applied to

all graduate hours. But, because of technical and political obstacles, both proposals were dropped in favor of the existing formula method.

The problem of equity led to the dropping of the undergraduate split-rate structure, despite the fact that a viable computer methodology had been developed for this purpose. The proposed approach would have involved a complete restructuring of salary rates and S/F ratios in the lower and upper divisions. Trial computer runs demonstrated that the large institutions, the University of Texas at Austin and Texas A&M University, would have received the greatest benefits from the new breakdown because they had the highest densities of upper-division courses and students.[54] Various artificial schemes were suggested as alternatives, but even these favored three or four institutions with large increases in funding, while the remaining colleges and universities received only small increases. Because the resource distribution schemes favored the University of Texas and Texas A&M, the Faculty Salaries Committee was forced, for reasons of equity, to discard plans for the lower-division/upper-division rate breakdown.

Once the decision to retain the existing formula structure had been made, the committee thoroughly examined all program areas and all factors which contributed to the determination of formula rates for those programs. The capability for centrally gathering information in the state was not adequate for thorough formula review. The committee relied heavily on data collected in a 1967-68 study of the faculty salaries area conducted for the Coordinating Board by William Thomas, a financial officer at Midwestern University. These data (which included intra- and inter-state comparisons) served as guidelines for determining the S/F ratio to be used by the Faculty Salaries Committee in calculating the proposed rates for each of the program areas. (One observer noted that S/F ratios were set "by guess and by gosh." The Committee tried to establish formula rates that seemed reasonable by testing various combinations of S/F

ratios and faculty salaries.) The Committee recommended that S/F ratios be increased in almost all program areas and levels of instruction because teaching in Texas was not as "productive as in the comparison states." (These productivity increases are shown in Appendix C, Tables C-3 and C-4.)

Similarly, the Committee used data from the Thomas study (though incomplete) along with personal experience to establish the salary levels used in calculating formula rates for the program categories. An inflationary factor was used to update the available data to 1971-72. The Committee was liberal in its assignment of S/F ratios but conservative in its adjustment of salaries--the increase in S/F ratios had a greater impact on the size of the budget than did reasonable increases in salary averages. Nonetheless, the recommended salary levels were significantly higher than existing ones.

One indicator of the suitability of the formula rates was a comparison of the statewide appropriations in FY 1968-69 for each program with the amount actually budgeted by all of the institutions for each program:

> The Committee, while reemphasizing the essential underlying concept of the formula approach that formulas should produce an equitable distribution among the institutions of a total number of dollars sufficient to finance adequate faculty salaries at all of the institutions and should not be used to restrict institutional flexibility in the expenditure of these funds, did compare the total statewide appropriation in fiscal 1969 for each formula area with the total budgeted by all of the institutions for each such area. Although the institutions necessarily operated within the constraint of the overall amount appropriated, a statewide comparison of the total budget to the total appropriated for each program area does give some indication of the adequacy or inadequacy of the formula rates for the various programs. This actual experience was given consideration in determining the extent of the increases proposed. For example, in determining the formula rates for Teacher Education, Social Services, and Library Science, the fact that there was underbudgeting in these areas influenced the fixing of a lower rate than would have been fully justified on the basis of the out-of-state data on student-teacher ratios and

> salaries for these programs. Conversely, in those areas such as Nursing, Fine Arts, and Agriculture, where substantial overbudgeting occurred, an attempt was made to fix a formula rate which would provide greater parity with other program areas but which also would be fully supported by the available out-of-state data.
>
> The experience of a statewide underbudgeting (2.8%) in Liberal Arts was discounted for the reason that the large appropriations resulting from the number of students in this area are the source of institutional funding for other programs which are underfinanced.[55]

With regard to new-program funding, the Faculty Salaries Committee pointed out that "new programs requested by the institutions and approved by the Coordinating Board receive no immediate support from the state and may exist for a number of years before the volume of semester credit hours produced by the program is large enough to provide a sufficient appropriation to pay necessary faculty costs."[56] The situation was especially critical in the financing of new professional and graduate programs where support costs also ran high. The committee was unable to develop a formula for new programs because of time constraints but did recommend that requests for new-program funding be included in the total for Faculty Salaries and not be shown as a special item. However, the Coordinating Board did not incorporate the suggestion into the Faculty Salaries formula request.

Although the study of the Faculty Salaries formula for the 1971-73 biennium was probably more thorough than the reviews conducted by other formula study committees, the general approach was similar. The study committee concept was not used for updating the 1973-75 formula but did reappear in reviewing the recommended formulas for 1975-77. The reviews were, in general, not as thorough as in 1971-73.

THE DEMISE OF BUDGETARY FORMULAS

The budgetary formulas in California and Illinois were abandoned in the early 1970's, while the Texas formula system remains in use. Why were formulas retained in one case and dropped in the others? The dissolution of formula procedures is characterized by an erosion of trust and confidence in the budgetary formula(s), and a lack of responsiveness to state-level pressures for change. Moreover, the deterioration of trust and confidence is speeded by a breakdown in interorganizational communications on policy matters in general and budgetary concerns in particular. Stated briefly, Texas has never experienced an economic situation bleak enough to force the institutions to seriously undermine the formula through manipulation. Moreover, the agencies with responsibility for higher education operating budgets have always maintained very open channels of communication. These conditions did not obtain in California and Illinois.

State Economic Conditions

California. Both Illinois and California higher education experienced rough sledding in the late 1960's and early 1970's because of serious statewide revenue constraints. The rapid growth of higher education in California during the early and mid-1960's, with a concomitant increase in the cost of services, signaled the pressures that would alter the formula in the 1970's. In general, skyrocketing costs forced the state to examine agency budget requests more closely in order to reduce low-priority items and to force agencies to operate more efficiently.

While the state colleges campaigned for lighter faculty workloads for graduate instruction and for research release time, the Legislative Analyst's

staff engaged in a counter-offensive aimed at increasing the productivity of the faculty. The first indication of this concern for the "more efficient use of faculty resources" appeared in the Legislative Analyst's report for FY 1962-63. In the early 1960's enrollments began to create heavy demands for state resources. Consequently, the Analyst's staff assumed that productivity in higher education could be improved. Furthermore, the staff argued that enrollments would have to increase without a correspondingly large increase in teaching staff.[57] The Analyst's staff, in the FY 1962-63 report, looked closely at the state college faculty staffing patterns. Although the faculty staffing formula was a resource acquisition device, the staff emphasized that the formula had to be the source of any productivity gains:

> It must be understood that this formula is employed for budgetary purposes only: The actual assignment of teachers, the determination of proper class sizes and the distribution of teaching load has been left to each college. In practice, the workload at any college or for any single department varies above and below the formula allowance. Thus, released time (a lighter load) may be, and has been, achieved for some faculty members by increasing the workload for others. And, because the formula also takes into consideration the class size deemed appropriate for each type of course, it is also possible to vary workload by adjusting class sizes. Moreover, by increasing the average size for all classes, it is possible to reduce course loads across the board.[58]

The Legislative Analyst's suggestions for improving productivity tended to limit the WTU faculty staffing formula's flexibility:

1. Increase average class sizes by expanding all classes, by utilizing a greater number of larger classes, or by reducing the number of very small classes.

2. Increase faculty workload in terms of the number of courses or course units taught by reducing noninstruc-

tional activities or by reducing the number of class hours required for each course.[59]

The Legislative Analyst recommended that both the state colleges and the University of California initiate productivity studies and report to the 1963 session of the legislature their preliminary findings.

By early 1964, the staff of the Legislative Analyst had become highly critical of the faculty staffing formula, arguing that it had outlived its usefulness. The Legislative Analyst's report for FY 1964-65 recommended the adoption of a systemwide S/F ratio supplemented by annual reporting of ratios by level of instruction and department for each college. Furthermore, the Analyst's staff suggested that the colleges should seek ways to increase the overall S/F ratio from 16:1 to 18:1 or 20:1 by increasing class size, where justified, and by providing the faculty members with incentives for taking on larger student workloads.[60] Despite these recommendations, the WTU faculty staffing formula remained intact until 1971. Note, however, that when the formula was finally changed by the Department of Finance, its new form was very similar to that recommended by the Legislative Analyst's staff in 1964.

The fiscal stresses forced a ceiling on the higher education budget for FY 1970-71. FY 1970-71 was projected as a very lean year for the California state treasury--the revenue base was not expected to increase that year because the legislature was not willing to hike taxes with an upcoming election in 1972. Because statutory requirements committed most of the revenue, higher education remained an area that could tighten its belt. Furthermore, California suffered the cash flow problems typical of states without tax withholding schemes. As a result, the state had to borrow huge sums of money to pay off debt service because the state did not receive the bulk of its revenues until April. Unfortunately the particularly high debt service absorbed many dollars which might otherwise have flowed into the higher education sector.

The budgetary process for FY 1970-71 differed from previous years in that the Department of Finance established a dollar target for the state college operating budget request.[61] However, decisions concerning ingredients of the total budget were left to the discretion of the Office of the Chancellor and the colleges. The Chancellor's staff, working within the framework of the WTU faculty staffing formula, requested an additional 1,153 faculty positions to meet anticipated enrollment increases.

Everything proceeded smoothly until May 1970 when the Department of Finance suddenly realized that there would be an enormous deficit for FY 1970-71 unless corrective action was taken. Because of the late timing of the discovery, the Legislative Analyst's staff was compelled to prepare alternative strategies for reducing the projected deficit. One proposal, subsequently agreed to by the 1970-71 budget conference committee, was to eliminate the graduate-level differential which had been implemented in 1967. The following year when the state colleges proposed reintroduction of the 10-unit load for graduate instruction neither the Department of Finance nor the legislature would accept it. Both state-level organizations argued that the colleges could squeeze the extra time for graduate instruction out of the formula--they had always done so prior to 1967. The Chancellor's strategic error appears to have been not formally incorporating the graduate instruction differential into the formula structure in 1967; the differential had been treated more as a general policy agreement at the time.

Illinois. The first indications that state-level officials in Illinois were becoming more cognizant of the relationship between higher education budgets and the solvency of the state treasury appeared in late 1967 and early 1968 as the Board of Higher Education's public members began to complain more frequently that institutions received larger reimbursements from grants and contracts for

indirect costs and that these same institutions had complete freedom in spending the revenue. In short, these IBHE members argued that this income should be deposited in the state treasury to reduce the General Revenue funds actually appropriated. As a result of the increasing concern, the Budget Formula Committee established a subcommittee to prepare guidelines for reporting indirect cost income and expenditures.

The Budget Formula Committee also began to consider a number of problem areas, including cost increases, methods of reflecting full funding, and the refinement of budgetary procedures toward program base budgeting and tuition levels.[62] In general, the phenomenal growth of Illinois higher education between 1962 and 1968--the doubling of public institution headcount enrollments from 119,668 to 243,780 students, the more than doubling of state resources appropriated for operating budgets from $236 million to $593 million, and the establishment of 19 new community colleges and six new university campuses--finally caught up with the state's treasury.[63]

The severity of the state's fiscal plight was made known soon after the new Republican governor, Richard Ogilvie, took office in January 1969.[64] Ogilvie directed the Department of Finance to undertake a thorough review of the budget in preparation for his first state budget presentation to the legislature. Before the review had been completed, the Revenue Study Commission, appointed by Ogilvie's predecessor, estimated a budget deficit of more than $1 billion for FY 1969-70 alone.[65] The Department of Finance's review and the Revenue Study Commission's projected deficit weighed heavily in the governor's April 1969 budget message. Ogilvie confirmed the projected deficit, proposed that the deficit be erased with a "combination of tight fiscal controls and enactment of a state income tax," tightened fiscal controls by shifting from a biennial to an annual budgetary cycle, and recommended the creation of a powerful Bureau of the Budget (with responsibility for budget and

fiscal analysis, long-range planning, program evaluation, and development of management information systems). Consequently, higher education lost the stature that it had enjoyed in the public mind during the 1960's. The proposed income tax brought heavy attacks on the higher education community for its alleged unchecked spending. Moreover, higher education was no longer the governor's top priority budget item; instead, the top priorities were elementary and secondary education, transportation, and revenue sharing with local governments.[66]

Ogilvie made no reductions in the Illinois Board of Higher Education recommendations for FY 1969-70, noting that there had not been sufficient time to permit adequate analysis of the recommendations; however, he expected the legislature to slash the IBHE request. Higher education did come under pressure during the 1969 session of the legislature. Layzell notes:

> The universities were charged with waste, inefficiency, mismanagement, poor administration, and, in some cases, with deception. The Board was accused of being too solicitous of the universities' welfare and with not supplying the legislature with the information it needed to judge the merits of higher education appropriation requests.[67]

Nonetheless, the legislative reductions, though severe, came primarily in the capital area and retirement fund and did not have a significant impact on the instructional area. Higher education operating requests, however, were treated more harshly by both the Bureau of the Budget and the legislature in subsequent years.

Formula Manipulation

The use of budgetary formulas to maximize budget appropriations--by means of either the "legal" alteration of formula parameters to benefit the institutions or the "illegal" misrepresentation of historical or projected data--

was a significant factor in the erosion of state-level trust and confidence in the California and Illinois formulas. (That is not to say that colleges and universities in Texas do not seek to increase their share of the state appropriation, but rather that there have generally been few complaints that institutions purposely misrepresent their budget requirements through formula manipulation.) Legislatures and executive budget offices had intended formulas to serve as instruments which generate institutional budget requests based upon objective criteria and not as tools for "raiding" the state treasury.

California. Developers of the California State Colleges' WTU faculty staffing formula at both the state and institutional levels were apprehensive about potential formula manipulation from the very beginning. James Enochs of the Department of Education had anticipated the state-level concern in 1953 when he warned the colleges that any increase in staff would require a convincing justification, based on either expanded curricular offerings necessary for a minimum curriculum in a given program or large increases in student enrollments. However, Enochs cautioned against trying to justify staff increases on the basis of an expansion of curricula:

> Having had a fairly successful legislative budget hearing, and having received favorable support in terms of our attempts to study our programs, the Division of State Colleges and Teacher Education and the colleges themselves are on the spot. If we are to continue that favorable position we will have to be rigorous in applying our own controls.[68]

Enochs also noted that the one state reservation was the question of the extent and location of control. Enochs, in frequent contact with state officials, argued that the colleges were capable of self-policing; in fact, he felt that policing could be done effectively only at that level. He guessed that the legislature was willing to accept that principle, but that legislators would

watch the FY 1954-55 requests carefully to insure adequate college-level control. The formula could be scuttled, Enochs predicted, if just one college presented a request for staff significantly larger than the one for FY 1953-54.[69] With this in mind, one dean of instruction pleaded in 1953 for the conservative use of the formula:

> The permanent success of the Formula will be determined largely by the use made of it this year. Requests for staff increases should be applied honestly, conservatively, and with a pure heart.[70]

In the late 1950's, however, the WTU formula began to be misused. There had not been much distortion of the formula during its first few years because it took time for the campuses to learn to use the formula, and there was sufficient enrollment growth guaranteeing increased budgets to preclude formula manipulation. But the colleges eventually learned to use the formula to their own advantage--campuses sought to enrich the staffing pattern with courses and classes that carried a richer faculty staffing. This was quite easy to do with the rapid enrollment growth and the steady increase in new curricula. One observer noted that two campuses in particular--Los Angeles State and San Fernando Valley (now Northridge)--were prime examples of institutions which abused the formula. In addition, two other colleges--California Polytechnic Institute and Humboldt State--avoided formula manipulation by enriching their budget through use of favorable political forces in the legislature.

The Department of Finance, always in close contact with the state colleges through Enochs of the Department of Education, became increasingly concerned about the formula misapplications for two reasons. First, the formula was not really an objective instrument. A large subjective element of the formula dealt with the question: What must be offered to provide a satisfactory program? As curricula and courses proliferated in the late 1950's and early

1960's, it was clear that there were great differences of opinion across colleges. Secondly, the state colleges never adequately defined what an approved program was or what elements were supposed to be included in such a program. The result was the proliferation of courses in the colleges.

Another troublesome aspect of the formula procedure was the review of the budget requests. During the 1950's a small group of administrators, including Enochs, checked the state college budget requests at the Department of Education. The review focused on the staffing worksheets on a class-by-class basis, and was done by hand. The accuracy of this group's work had engendered considerable trust between the Department of Finance, especially between Roy Bell and Enoch's team. However, with the rapid enrollment growth in the late 1950's and early 1960's, the class-by-class check became difficult to perform because of constraints on manpower and time. Consequently, the quality of the review deteriorated, and with it went the Department of Finance's faith in the Department of Education's capacity to police the formula.

The creation of the Board of Trustees and the Systemwide staff ended the liaison function performed by Enochs for both the Department of Education and the Department of Finance. Observers have noted that Finance began to audit the faculty staffing formula after Enochs relinquished his duties as "policeman" of the staffing worksheets. Prior to his departure, Enochs was largely responsible for the relationship of trust between the colleges and the Department of Finance.

Postaudits had always been conducted by Finance, even before the advent of the WTU faculty staffing formula. The postaudit checked the college class schedules to determine whether or not all of the courses that were supposed to be offered had in fact been offered. The Department of Finance

"slapped a few wrists" for infractions found in the postaudits, but these errors did not affect the budgetary outcomes the next year.

The first Finance management audits were conducted during FY 1964-65 for a number of reasons. First, enrollments increased rapidly during the early and mid-1960's with a concomitant increase in the cost of services. Consequently, the Department of Finance investigated the proliferation of courses and programs in the state colleges. Secondly, some colleges applied the staffing formula differently during the early 1960's, as indicated by the sudden plummeting of S/F ratios at some institutions, but not at others. Even those institutions not having a rapidly declining S/F ratio often manipulated the formula with some sophistication. Finally, there were pressures within the faculty to drop from the 12-unit workload to one of no more than nine units.

Once the WTU formula was firmly established, the Department of Finance was not concerned that the faculty staffing formula would "break the treasury." The state's enrollment growth projections were reasonably accurate (if on the low side) and there were no major surprises; in addition, higher education had a high priority in state finances during the early 1960's. In fact, if higher education had needed additional funding, it probably would have been furnished at the expense of some other public sector. However, the worsening reputation of the formula and the increasing demands of other agencies for scarce resources brought on management audits.

At first the audits were simply a check on errors made in the budget requests. Finance found many errors--institutional representatives tended to complete the staffing worksheets without careful review, one observer complained. The Chancellor's staff performed a cursory review, or "paper audit," of the institutional requests by comparing current requests with historical trend data, but the staff was not large enough to conduct a full-scale review. Consequently, Finance began to uncover gimmickery in its checks.

One common institutional practice was to project course enrollments at just over the "breaking points" for the particular modes of instruction in order to increase the number of extra sections needed. Rather than staffing these extra sections, the institutions changed the mode of instruction for the course or put all students into one class and used the "extra" faculty positions generated by the formula as discretionary resources. The state colleges often claimed, for example, that they were given insufficient administrative positions. Therefore, the colleges might have used the "extra" faculty positions for administrators--a practice known as "bootlegging." In FY 1969-70 some state colleges were caugh. using faculty positions to supplement the administrative positions. In one such case, the FY 1969-70 budget provided Sacramento State College with 26 faculty positions for academic planning. The college actually, however, allocated an additional 13.1 positions to this activity from positions budgeted for teaching functions. The 1969 session of the legislature was sufficiently concerned about the reallocation of teaching positions that it put limited language into the 1970 Budget Bill to control this misuse of the formula.[71]

Another tactic used by the colleges was to ask students originally enrolled in sections of undergraduate courses in which enrollments exceeded the breaking points to enroll for independent study courses. The students continued in the undergraduate course but received credit for an independent study course which had a richer faculty staffing value.

What the misallocation of faculty positions did to the state level's trust and confidence in the colleges is evidenced by four concerns in the Legislative Analyst's FY 1970-71 report:

1. The budget does not give an accurate picture of the amount of academic administration performed at the colleges.

2. Positions justified to the legislature for the purpose of teaching are not in fact used for that purpose.

3. Doubt is created whether additional administrative duties could be justified through the budget review process.

4. The validity of the faculty staffing formula used to generate teaching positions becomes difficult to substantiate.[72]

The Department of Finance contended that institutional planners used linear programming methods to estimate classroom enrollments, and that this methodology led to the "stacking" of predicted enrollments just over the breaking points. Finance used statistical tests to determine whether or not there was indeed a random distribution of courses with classes enrolled beyond the breaking point. When infractions were uncovered, using this technique, Finance disallowed the questionable requests for faculty positions. As Systemwide's own internal auditing procedures became more sophisticated in the late 1960's, most of these discrepancies were corrected by the Systemwide staff prior to the incorporation of the institutional requests into the Board of Trustees budget.

The Department of Finance Audit Division was heavily criticized by the colleges for two reasons. First, the colleges were opposed to the manner in which some of the audits were conducted. Finance conducted several audits on campuses by disguising the auditors as students--the auditors attended classes, noted enrollments and modes of instruction, and compared them with what was actually requested in the staffing formula budget request. Opposition to these auditing tactics became so vocal that Finance was forced to subsequently curtail this type of audit. The Audit Division's efforts were thereafter focused primarily on institutional records. Secondly, and more important, the Department of Finance reneged on its agreement with the state colleges to use the formula

as a resource acquisition device. Instead, Finance began to use the WTU faculty staffing formula as an audit track. That is, Finance argued that the colleges were supposed to use their faculty positions in the same (or nearly the same) manner in which they were generated by the formula. Thus, Finance viewed the formula as an internal management instrument as well as a resource acquisition device.

By downplaying the original formula ground rules, Finance limited institutional flexibility. It was extremely difficult to predict accurately enrollment levels or even modes of instruction 18 months prior to the beginning of the fiscal year. A certain amount of what Finance considered "misapplication of the formula" was only internal reallocation for projections that did not materialize. In the late 1960's, the Department of Finance appeared to soften its position regarding the use of the formula: the formula was not intended to be an internal management tool, but Finance wanted to make certain when a college said it was offering a large class in a lecture hall, it actually was--if the class were smaller than expected, for example, it should be classified properly.

Although manipulation of the California WTU faculty staffing formula had been rampant throughout the 1960's, the cumulative effect was not felt until the 1971-72 budgetary cycle and the release of the Teerink Report, a Department of Finance-sponsored review of formula usage. That report illustrated that the manipulation of the extremely flexible formula had reached distressing levels from a Department of Finance perspective, and that the cost to the state was becoming excessive. When complaints of formula looseness and undersirable incentive structure were combined with an increasing interest in management control of outputs rather than inputs, as they were in the Teerink Report, the WTU formula was doomed.

Illinois. The problem of formula manipulation was slightly different in Illinois, and can be viewed from two levels. First, the institutions engaged in some devious practices in applying the unit-cost formula to generate their requests to the Board of Higher Education. But because such manipulation was contained or hidden within the higher education sector and did not reach the Department of Finance or, more importantly, the legislature, it did not imperil confidence in the formula. However, the state-level did begin to lose confidence in the formula as a generator of the higher education sector's true needs--the formula was too rich. Surely this complaint focused on, among other factors, the "catch-up" funds provided some institutions to make up deficiencies in their budget bases. Thus, the state-level saw a grosser form of manipulation in which the entire sector's needs were somewhat misrepresented. The disatisfaction is noted by a Bureau of the Budget official:

> For most of the period [1969-74], BHE sought to defend a budget formula for universities which built upon the inflated operating base of the 1960's. Detailed budget review was restricted to new programs and capital projects. As the requests generated by the formula grew faster than State resources, the Board sought first to modify the formula and later scrapped it.[73]

Texas. Why has the use of formulas in Texas been relatively free to manipulation? One reason is that historical data, the basis for the Texas formula, are actual whereas projected data are always uncertain. In contrast to the California case, the Texas Commission on Higher Education and its successor, the Coordinating Board, have always wielded strong program review authority. With regard to the use of faculty slots for administrative duties, Texas colleges and universities may sometimes violate the regulations concerning the transfer of resources between functions.[74] Yet the incentive structure of Texas' formula for Faculty Salaries encourages adherence to the letter of the law. Appropriations for Faculty Salaries are based on semester credit hour production.

Institutions are free to employ as few or as many faculty positions as they wish within the constraints of the total resource pool available, and may even, sub rosa, assign faculty positions administrative duties, but unless the semester credit hour production is sustained or increased, the resource level will decline. Because administrative posts do not generate semester credit hours, the continued practice of using teacher resources for administrative functions in no way enlarges the Faculty Salaries appropriation and may even reduce it over time.

There are other plausible reasons for the Texas institutions' conformity to the rules of formula usage. A state auditor's office, with a role similar to that of the California Department of Finance Audits Division, audits the institutions' reported semester credit hour production; although these audits are not performed on a regular basis, all of the schools are eventually reviewed. The Coordinating Board must certify each biennium that the colleges and universities have applied the budgetary formulas against the correct semester credit hour or headcount enrollments. Prior to 1965, one institution was rumored to have inflated its report of masters-level semester credit hour production. The Texas Commission investigated the matter, discovered that the production reports were indeed false, and reduced the recommended appropriation for the institution.

Another factor which reduces the need to manipulate the formula in Texas is that institutions may request resources in excess of the formula-generated totals. In requesting resources for the 1971-73 biennium, for example, the 22 public senior colleges and universities requested more than $42.8 million over the amounts which would have been produced by using the formulas recommended by the Coordinating Board.[75] Under certain circumstances, and assuming a sound justification for the overage, the legislature may approve the request. Generally, however, the Legislative Budget Board staff begins with the Coordinating Board recommendations (i.e., the amounts generated by the designated

formulas) as an upper limit and makes cuts according to the legislature's priorities.

A final element of the formula system which functions to minimize chicanery is contingency funds provided in some biennial budgets. Because the Texas formulas are applied against historical enrollment or semester credit hour projection data, appropriations for the second year of the biennium tend to lag at least two years behind real needs during a period of enrollment growth. Consequently, the legislature appropriated contingency funds for Faculty Salaries for some biennia during the growth years of the 1960's to cover enrollment growth during the second year of the biennium; the funds were appropriated to the institutions, but allocated by the Texas Commission on Higher Education or the Coordinating Board according to the Faculty Salaries formula. The contingency funds usually did not satisfy the demands which growth imposed during any particular biennium. Accordingly, the Commission or Coordinating Board distributed the funds in compliance with the formula on a prorated basis. Nonetheless, the institutions could anticipate some extra resources to cover unanticipated enrollment overruns.

Breakdown in Interorganizational Communications

A third factor responsible for the dissolution of a formula system (or any budgetary procedure) is the disintegration of interorganizational communications, accompanied by diminished trust and confidence among the budgetary actors. In particular, a requesting agency's success depends heavily upon the ability to maintain open lines of communication with higher levels in order to pick up cues and signals from the environment. The last stages of formula evolution in both California and Illinois were characterized by either a closed system or a unidirectional flow of information between organizations.

California. The bitter controversy over formula use in California was fueled by the report of the Teerink Committee. This committee was an "efficiency task force" commissioned by the Reagan administration to study issues related to faculty workloads in California higher education, specifically, in the California State College System and in the University of California. The Department of Finance, which commissioned the study, intended the work to be an objective, academic review exercise. Initially, the Committee analyzed such data as student enrollments by level of student, the number of courses per student, and faculty and class size to determine such indices as teaching effort per student credit hour, the teaching effort at each faculty rank, and the average class size.[76] But between September and December 1970, the Committee's work eased its way into the ongoing budget cycle for FY 1971-72.

The Department of Finance rejected the state colleges' FY 1971-72 formula-generated budget request for faculty staffing, ostensibly because Finance would not accept the heavy independent study load generated by the formula.[77] The underlying reason was undoubtedly one of economy. No prior notice of this Finance action was offered to the Chancellor's office. The state colleges' Board of Trustees had adopted a budget request of $369.3 million, which was sliced to $316 million in the governor's budget.[78] Furthermore, the 1971-72 governor's budget contained a reduction of 1,392.4 faculty positions below the level generated by the staffing formula, a cut of $14.4 million "based on skepticism as to the implementation of the formula."[79] This personnel reduction was actually 250 less than the number of positions authorized for FY 1970-71--despite a projected enrollment increase of 18,525 FTE students. Observers were first unclear as to the source of the data used to justify Finance's position, but soon it was revealed that the data had evolved from the Teerink Committee's work.

The final draft of the Teerink Report did not appear until March 1971, and then only in limited circulation. The contents of that report previously had been rumored to exist, but had not been made available to either the state colleges or the Legislative Analyst's staff. With respect to the state colleges, the Teerink Committee recommended that the colleges discontinue the use of the faculty staffing formula and weighted teaching unit (WTU) as management and budgetary devices.[80] This recommendation was based on an analysis of fall 1969 data submitted to the Teerink Committee by the colleges.

First, the Committee argued in the Report that the formula could be easily manipulated. By "applying appropriate techniques, the very flexible formula can be made to provide varying numbers of full-time equivalent faculty positions for the same numbers of students or conversely accommodate a varying number of students with the same number of faculty." Secondly, the task force noted that the formula discouraged efficiency because it tended to give greater weight to small classes and individual study than to larger lecture classes, constraining faculty members who sought to increase their productivity through different modes of instruction. Thirdly, the Committee claimed that the formula encouraged course proliferation because it gave greater weight to the addition of a new course than to the addition of extra sections of an existing course. Fourthly, the Committee insisted that the formula measured the instruction input of full-time and part-time faculty unequally. The use of part-time faculty was encouraged as long as extra weighted teaching units were added to the available staffing resources, and the resources were not diverted elsewhere. Finally, the Committee noted that the formula dealt primarily with faculty rather than students. The formula was structured in terms of inputs to the educational process (i.e., faculty workload) rather than in terms of outputs (i.e., student credit hours or degrees granted). The Department of Finance was especially sympathetic to this criticism and used it as a foundation for the interim formula which evolved in 1972.[81]

The state colleges and the Legislative Analyst's staff disapproved of the process by which the Teerink Committee collected and analyzed the data. The Analyst's staff was extremely favorable toward the evaluation of the instruction function in terms of output and indicated that the Teerink Report might be the cornerstone of a new approach to budgeting instructional positions for higher education. The staff, however, was deeply disturbed by the Department of Finance decision to reduce 1,193.7 faculty positions because it took significant liberties with the data presented in the report. Moreover, the Analyst opposed the lack of participation in the decision to reduce the budget. There had been no direct input from the state colleges except for the data which went into the Teerink Report. Moreover, on such short notice it was almost impossible for the colleges to gear up for the reduction.

Illinois. For several years a similar communications problem in Illinois plagued relationships between the institutions and the Board of Higher Education on the one hand and the Board and the newly-formed Bureau of the Budget on the other. The problem is sufficiently important to warrant an in-depth review of the historical development. Part of the problem can be traced to a new executive director and staff of the Board of Higher Education. Lyman Glenny resigned in June 1968, effective January 1, 1969, and was replaced by a young political scientist, James Holderman. Holderman sought a large staff, partly at the urging of the Department of Finance, and recruited young, relatively inexperienced aides.[82] The institutions had considerable difficulty adjusting to the new staff, just as the staff found it difficult to deal with a new agency--the Bureau of the Budget--which was just beginning to test its strength.

The first head-to-head confrontation between the Bureau of the Budget and the IBHE occurred in the preparation of the state budget for 1970-71, with the IBHE emerging as the winner. Governor Ogilvie, through the Bureau of the Budget, pressed for an overall target of $510 million, considerably less than

the FY 1969-70 appropriation. The IBHE later presented recommendations totalling $655.5 million. In developing the recommendations, the IBHE used the same formula procedures as used in FY 1969-70. The Bureau of the Budget had understood that the IBHE was to examine institutional budget bases to cut back on obsolete or low-priority programs; however, the IBHE staff, which had been doubtful about ever reaching the Bureau of the Budget goals in the first place, claimed that the Bureau's expectations of a thorough budget base review had not been clearly communicated.[83] In the end, the legislature took a compromise position closer to the IBHE than to the governor. The net effect on the budget totals was a reduction in IBHE recommendations of less than two percent.[84]

In preparing the FY 1971-72 state budget the scenario of the previous year was repeated, but with the governor and the Bureau of Budget emerging as winner. This time the IBHE promised to produce a FY 1971-72 budget that was less than or equal to the previous year's total appropriation by making some minor revisions in the formula procedure.[85] To aid the IBHE in the budget review tasks, the Bureau of the Budget agreed to provide planning targets.[86]

Despite promises to the contrary, the IBHE staff did not actively involve the Bureau of the Budget staff in the budget review process. One Bureau of the Budget staff complaint was that they were not invited to attend IBHE-institutional conferences, although it was easy to understand the institutions' reluctance to make such concessions. The Bureau of the Budget kept its side of the bargain, however, and furnished the IBHE staff a guideline target of $672 million.

Needless to say, the Bureau of the Budget and the governor were not prepared for the IBHE "bare bones" recommendation of $860 million in January 1971, nearly $200 million in excess of the Bureau of the Budget guidelines. The IBHE recommendations were included in the Executive Budget because there

was not sufficient time to perform the complete analysis necessary to justify reductions; however, the higher education requests were returned to the IBHE for a second review. Thus, the governor shifted responsibility for making reductions to both the legislature and the IBHE.

The institutions, in turn, came under considerable state government pressure and placed much of the blame for their predicament on the IBHE staff. First, the institutions complained that the IBHE staff had not provided them with information concerning either Bureau of the Budget guideline targets or even IBHE staff promises to the governor to hold the line on the FY 1971-72 higher education budget. Thus, the institutions felt justified in assuming that the existing techniques, including formulas, used to generate budget requests would still produce a total which was "saleable" to the legislature and state executive.[87]

Secondly, the institutions regretted the diminution of the committee and task force structures common under the Glenny regime. Holderman tended to deal with institutional executives on an individual rather than collective basis, leading to what the institutions argued was a breakdown in interinstitutional communications, especially at the technical level. (A Salary Studies Task Force was created to set rates for salary increases for the 1971-72 budget formula, however.) A particularly sensitive point was the gradual dissolution of the Formula Budget Committee. Holderman's staff was viewed as too inexperienced to understand the complexities of the unit-cost formula, especially for reconciliation of cost study data and institutional expenditures. Moreover, the IBHE staff seldom sought the technical assistance of the experienced institutional representatives, further closing off communications between the institutions and the IBHE staff. The institutions contended that as a consequence of the staff's inexperience and their reluctance to seek technical assistance, the IBHE staff presented a weak defense of the institutional requests before the

Bureau of the Budget.[88] (In all fairness to the IBHE staff, one outside observer was convinced that the institutions played upon IBHE staff inexperience and used their institutional experience with the formulas to manipulate them to their advantage, inflating the budget requests and finally undermining the legitimacy of the formulas.) Another consequence, from the institutional perspective, was that budget requests were reviewed by the IBHE more and more on the basis of subjective criteria. Accordingly, some institutional officials felt that the IBHE staff was more concerned with political maneuvering than with educational policy.

The institutions lobbied vigorously in the legislature to have the governor's recommended reductions restored, with some small measure of success. The governor exercised his new reduction veto authority to bring the budget more in line with his recommendations.[89] The net effect of the FY 1971-72 budgetary cycle for higher education was a gain in appropriations of less than two percent over the previous year.

The erosion of trust and confidence between the Bureau of the Budget and the IBHE finally took its toll on the formula in FY 1972-73. Although the IBHE agreed to work with the Bureau to develop better budget preparation and review techniques, the IBHE planned to retain the formula concept (slightly revised) for FY 1972-73.[90] The Bureau of the Budget argued against the formula, having concluded that the IBHE revisions "would not compensate for the built-in inflation nor would supplemental budget review documents provide sufficient data to challenge the formula-generated request."[91]

Much to the IBHE staff's chagrin, the institutional requests generated with the aid of the formulas were as large as the Bureau of the Budget had predicted. Rather than attempting to reduce the requests through analysis, the IBHE staff abandoned the formulas and the formula-generated institutional submissions and spent the month of August 1971 developing a new approach to

budget review. In September, a second budget call went out to all public institutions, instructing them to submit a list of high-priority programs and low-priority programs selected from ongoing or proposed activities.[92] Resources were allocated from low-priority programs to high-priority programs on a statewide basis. This sudden reversal of budgetary policy signaled the death of the unit-cost formula in Illinois.

FUNCTIONAL ALTERNATIVES TO BUDGETARY FORMULAS

The California State University and Colleges system immediately developed a new allocation procedure, the student credit hour per full-time equivalent faculty (SCU/FTEF) ratio, to replace the defunct WTU faculty staffing formula. The Illinois Board of Higher Education, however, has not rushed to fill the breach left by the demise of the unit-cost (and related) formulas, perferring to use what one staff member terms as the "eclectic approach" which includes some formulas in the noninstructional areas (e.g., the opening of new buildings) and rough "indicators" in the instructional area to provide guidance for what has become once again a traditional incremental process. The IBHE has drawn away from budgetary formulas in a time of declining enrollments because most enrollment-driven formulas would reduce operating budgets at too fast a rate unless the formulas were based upon marginal costs. Instead, more flexible indicators are used to make adjustments as they are needed in a more discretionary manner. The Bureau of the Budget continues to be concerned about the equity of resource distribution and appears to be moving in the direction of a broad formula which would allocate resources on a dollar-per-student basis at the undergraduate level, regardless of an institution's program mix. This concept is motivated by a market model of higher education services. It appears reasonably certain, however, that whatever allocation schemes evolve, there will not be another statewide reallocation exercise for some time, judging by the strong institutional resistance during the FY 1972-73 budget review process.

FOOTNOTES

Chapter 3

[1] For a more detailed history of the California experience, see Richard John Meisinger, Jr., The Politics of Formula Budgeting: The Determination of Tolerable Levels of Inequality Through Objective Incrementalism in Public Higher Education (PhD dissertation, University of California, Berkeley, 1975).

[2] The life cycle of a revolutionary managerial tool, PPBS, is described by David A. Tansik and Michael Radnor, "An Organization Theory Perspective of the Development of New Organizational Functions," Public Administration Review, 31, No. 6 (November/December 1971), pp. 644-652.

[3] Miller, J.L. Jr. State Budgeting for Higher Education: The Use of Formulas and Cost Analysis. Ann Arbor: Institute of Public Administration, University of Michigan, 1964, p. 54.

[4] Ibid.

[5] Enochs, J.B. "What Factors Should be Considered by an Institution in Determining its Staff Needs?" Current Issues in Higher Education, 1955, Proceedings of the Tenth Annual National Conference on Higher Education, Chicago, February 28 - March 2, 1955, ed. by G. Kerry Smith. Washington, D.C.: Association for Higher Education, 1955, pp. 205-206.

[6] State of Illinois, Board of Higher Education, Report No. 1 of the Executive Director, January 29, 1962, p. 1.

[7] Ibid.

[8] State of Illinois, Board of Higher Education, Report No. 10 of the Executive Director, December 20, 1962, p. 70.

[9] Miller, p. 71.

[10] Ibid., p. 70.

[11] State of Texas, Legislative Budget Estimates for the Fiscal Years Beginning Sept. 1, 1957 and 1958. Submitted to the Fifty-Fifth Legislature and the Governor by the Legislative Budget Board, January, 1957, p. 107a.

[12] State of Texas, Legislative Budget Estimates, 1959-61 Biennium, p. 108a.

[13] California State Department of Finance, Memorandum. TO: T.H. Mugford, Chief, Division of Budgets and Accounts; FROM: Everett M. Chandler, Associate Administrative Analyst; SUBJECT: Student-Teacher Ratio; Memo No. AN 227-2; May 18, 1951. Hereafter referred to as the Chandler Report.

[14] Thomas David Layzell, "Budget Review Procedures of the Illinois Board of Higher Education, 1962-68" (unpublished MA thesis, University of Illinois, Urbana, Illinois, 1972), pp. 74-75.

[15] Ibid., p. 71.

[16] Ibid., p. 80.

[17] Miller, p. 72.

[18] Ibid.

[19] Chandler Report, pp. 1-2.

[20] California State Department of Education, Division of State Colleges and Teacher Education, Minutes of State College Presidents Conference, June 4-5, 1951.

[21] California State Department of Education, Division of State Colleges and Teacher Education, Minutes of Deans of Instruction Conference, December 1951.

[22] California State Department of Education, Division of State Colleges and Teacher Education, Minutes of Deans of Instruction Conference, April 1952.

[23] The subject-matter fields are: Liberal Arts, Science, Fine Arts, Teacher Education, Agriculture, Engineering, Home Economics, Law, Social Service, Library Science, Veterinary Medicine, Vocational Training, Physical Training, Nursing, Pharmacy, and Business Administration.

[24] State of Texas, Legislative Budget Estimates, 1957-59 Biennium, p. 106. The Legislative Budget Board usually recommends rates in accordance with available state resources. In the 1957-59 budget requests the institutions applied the same formula framework with different coefficients (i.e., rates), which tended to yield requests which exceeded Legislative Budget Board recommendations.

[25] The S/F ratios for undergraduate instruction ranged from 10:1 (Fine Arts) to 19:1 (Liberal Arts, Science, Teacher Education, Business Administration). For masters-level instruction, the S/F ratios ranged from 6:1 (Science, Fine Arts, Engineering, Social Service, Nursing, Pharmacy) to 10:1 (Liberal Arts, Teacher Education, Veterinary Medicine, Business Administration). Law at the masters level was given a S/F ratio of 25:1. Doctoral-level instruction enjoyed S/F ratios of either 4:1 or 5:1. (Miller, State Budgeting for Higher Education, pp. 112-113).

[26] Western Interstate Commission for Higher Education, Yardsticks and Formulas in University Budgeting. Boulder, Colorado: Western Interstate Commission for Higher Education, 1959, p. 18. One official interviewed noted that there was no substantive justification for the refusal to give approval; it was the position taken by one stubborn individual.

[27] See Tables 1 and 2 in Appendix B for the latter formulas.

[28] State of Illinois, Board of Higher Education, Report No. 10 of the Executive Director, December 20, 1962, p. 80.

[29] Layzell, p. 70. The original source was a memo to the presidents from Richard G. Browne, Executive Director, Illinois Board of Higher Education, November 12, 1963.

It should be noted that although the review of the 1963-65 budget requests was not as sophisticated as in later years, the IBHE was highly successful in its presentations to the legislature. The recommended operating appropriations that were passed were precisely those recommended by the IBHE.

See State of Illinois, Board of Higher Education, Supplement to Report No. 16 of the Executive Director, July 1, 1963, p. 158.

[30] Layzell, p. 73.

[31] State of Illinois, Board of Higher Education, Report No. 28 of the Executive Director, August 26, 1964, p. 87.

[32] Ibid., pp. 87, 91.

[33] State of Illinois, Board of Higher Education, Report No. 32 of the Executive Director, December 22, 1964, p. 126.

[34] State of Illinois, Board of Higher Education, Third Biennial Report, 1965-66 (1967), p. 20.

[35] Texas Commission on Higher Education, Report to the Honorable Price Daniel, Governor of Texas, and the Legislature of the State of Texas, December 31, 1959, p. 9.

[36] The Board of Trustees of the State College System, established by the Donohoe Higher Education Act of 1960 in accordance with recommendations of the Master Plan for Higher Education in California, became the governing body for the state colleges on July 1, 1961. In so doing, it assumed the administrative functions for the state college system which were previously the responsibility of the State Board of Education and the Division of State Colleges and Teacher Education within the Department of Education.

[37] State of Illinois, Report No. 28, pp. 82-83.

[38] State of Texas, Coordinating Board, Texas College and University System, Annual Report of the Coordinating Board, Texas College and University System for the Fiscal Year Ending August 31, 1966, December 1, 1966, pp. 10-11.

[39] State of Texas, Coordinating Board, Texas College and University System, Annual Report of the Coordinating Board, Texas College and University System for the Fiscal Year Ending August 31, 1967, p. 16.

[40] State of Texas, Coordinating Board, Texas College and University System, Annual Report for the Fiscal Year 1970, September 1, 1970, p. 8.

[41] Layzell, pp. 74-75.

[42] Ibid., p. 74.

[43] Ibid.

[44] The first cost study data were not necessarily comparable to data from later cost studies because various modifications in cost accounting were made over time.

[45] Layzell, pp. 80-81.

[46] See Appendix B for a more detailed explanation of features of the 1967-69 formula.

[47] State of Illinois, Board of Higher Education, Executive Director's Report No. 52, January 11, 1967, p. 350.

[48] Layzell, p. 90.

[49] State of Texas, Coordinating Board, Texas College and University System, Designation of Formulas, Policy Paper 9, June 1970, pp. 11-15, 21.

[50] In Texas, budgetary formulas are intended as resource allocation instruments and not as expenditure patterns. Thus, within certain constraints, institutions can transfer into and from selected formula-generated budgetary functions. Therefore, the amount budgeted for Institutional Administration can exceed the appropriation level.

[51] State of Texas, Coordinating Board, Texas College and University System, CB Report, 9, No. 1-2 (January-February 1974), p. 1. The Faculty Development Leave formula was deleted for 1975-77, with a recommendation that each institution justify the requirement for such funds in individual budget requests.

[52] CB Report, 9, No. 3 (March 1974), p. 3.

[53] Coordinating Board, Texas College and University System, Designation of Formulas, Policy Paper 9, p. 91.

[54] One reason for this pattern was that a number of four-year institutions had, until recently, been two-year colleges. Thus, these schools had not yet developed their potential upper-division enrollment (and course) levels.

[55] Coordinating Board, Texas College and University System, Designation of Formulas, Policy Paper, 9, pp. 55-56.

[56] Ibid., p. 57.

[57] State of California, Analysis of the Budget Bill of the State of California for the Fiscal Year July 1, 1962, to June 30, 1963 (Report of the Legislative Analyst to the Joint Legislative Budget Committee), California Legislature, 1962 Regular Session, p. 190. Hereafter, this report will be cited as Legislative Analyst's Report for FY 1962-63.

[58] Ibid., p. 191.

[59] Ibid., pp. 193-194.

[60] Legislative Analyst's Report for FY 1964-65, p. 280.

[61] Legislative Analyst's Report for FY 1970-71, p. 439.

[62] Layzell, p. 103. Original source: Illinois Board of Higher Education, Minutes of October 20, 1967, Budget Formula Committee meeting.

[63] State of Illinois, Board of Higher Education, Growth in Illinois Higher Education, 1962-68, A Report of the State of Illinois Board of Higher Education, December, 1968, p. 21. Between 1961 and 1967 higher education appropriations, exclusive of reappropriations and emergency appropriations, increased from approximately seven percent to 16 percent of the total state appropriations. (Layzell, "Budget Review Procedures of the Illinois Board of Higher Education, 1962-68," pp. 135-136.)

[64] The Republicans had captured both houses of the legislature, too.

[65] Layzell, p. 120. Original source: State of Illinois, Illinois State Budget, Fiscal 1970, p. A-1.

[66] Layzell, pp. 121-122.

[67] Ibid., p. 123.

[68] California State Department of Education, Division of State Colleges and Teacher Education, Memorandum. TO: Council of State College Presidents; FROM: James B. Enochs; SUBJECT: Report on Curriculum Studies, 1952-53. Proposals for Curriculum Study, 1953-54; June 19, 1953.

[69] Ibid.

[70] California State Department of Education, Division of State Colleges and Teacher Education, Minutes of Deans of Instruction Conference, May 1953.

[71] Legislative Analyst's Report for FY 1970-71, pp. 444-445.

[72] Ibid., p. 445.

[73] Passmore, G. "Higher Education Budgeting, 1970-1973" (unpublished staff paper prepared for Governor Walker's Transition Team, Illinois Bureau of the Budget, Springfield, Illinois, 1973), unpaginated.

[74] Institutions are prohibited from transferring funds out of the Faculty Salaries line of the operating budget.

[75] CB Report, 5, No. 9 (September 1970), p. 1.

[76] Legislative Analyst's Report for FY 1971-72, p. 847.

[77] There had been a shift from the S-48 classification (which gave one weighted teaching unit for every 48 student hours of independent study) to the S-24 classification (which gave one weighted teaching unit for every 24 student hours of independent study). This enriched the staffing formula noticeably.

[78] Legislative Analyst's Report for FY 1971-72, p. 966.

[79] Ibid., pp. 967, 964.

[80] Teerink Committee, "Instructional Workload," [Teerink] Committee Working Papers, March 1971, p. 7. Hereafter referred to as the Teerink Report.

[81] Teerink Report, pp. 8-12.

[82] Layzell, p. 123.

[83] Passmore, "Higher Education Budgeting, 1970-1973."

[84] Ibid.

[85] See Appendix B for details of the FY 1971-72 formula procedures.

[86] Passmore, "Higher Education Budgeting, 1970-1973."

[87] The feeling was that the IBHE staff cut the budget requests but did not reduce institutional expectations, a precaution which could have been taken by changing the budget instructions and techniques to reflect fiscal reality.

[88] Soon after its creation, the Bureau of the Budget examined higher education's budgetary formulas for weaknesses. One observer remarked that the Bureau of the Budget "made a show of examples in the budget requests of errors and misrepresentations which were attributed to inadequacies in the formulas." Although the IBHE could account for all of the expenditures, the Bureau based some of their recommendations for cuts on the alleged misuse and inaccuracy of the budgetary formulas.

[89] A new constitution ratified in July 1971, provided the governor with line-item reduction veto powers.

[90] See Appendix B for the details of the formula procedures.

[91] Passmore, "Higher Education Budgeting, 1970-1973."

[92] For an excellent case history of this process, see H. Edward Flentje and Steven B. Sample, "Statewide Reallocation Through Program Priorities," Educational Record, 54, No. 3 (Summer 1973), pp. 175-184, and Lyle H. Lanier, "Comment on 'Statewide Reallocation Through Program Priorities,'" pp. 184-189.

4.

Formula Budgeting at the Institutional Level: Profiles of Two California State University Campuses

At the institutional level, formulas are instituted, changed, and abandoned just as on the state level. To provide a perspective on the procedures at the institutional level as they ripple down from the state level, this chapter profiles the internal budgetary process as of 1974-75 at two campuses in the California State University and Colleges system. The relationship between institutional and state-level policies varies markedly between the Hayward and San Jose campuses. Historically, the internal procedures at California State University, Hayward, have been tightly linked to the state-level formulas and have mirrored the events of the early 1970's as discussed in Chapter 3. However, senior administrators at San Jose State University buffer the state-level process from the internal workings to such an extent that the state formulas are not a significant part of that campus's budgetary process.

CALIFORNIA STATE UNIVERSITY, HAYWARD

The California State University, Hayward, created in 1957, is located in the San Francisco Bay region south of Oakland. Hayward is organized into four schools--arts, letters and social sciences, business and economics, and

education and science--and has a strong liberal arts and science emphasis. Thirty-five baccalaureate majors and 21 graduate programs are offered. Primarily a commuter-oriented institution, the FTE student enrollments rose from 136 in 1959-60 to a peak of 10,901 in 1971-72 before declining to 10,770 in 1972-73. Hayward has been hit harder by enrollment declines than perhaps any other, except one or two, of the 19 campuses in the California State University and Colleges system.

The Apparent Staffing Need (ASN) Methodology

Prior to the spring of 1967, internal allocation decisions at the departmental level at Hayward were made by the president. It was a "back pocket" operation whereby the president conferred with each department chairman individually and told the chairman how many faculty positions he would receive the following year. Allocations were often detailed to the fraction of a position. The total pool of faculty resources from which the president drew was generated by the WTU faculty staffing formula described in Chapter 3.

With the arrival of a new president in 1967, the Academic Planning Office developed a complex, formula-driven internal allocation scheme referred to as the Apparent Staffing Need (ASN) method. The allocation of faculty positions to the schools by the vice president for academic affairs was based upon the principle of student demand for individual courses and degree programs. Degree programs that attracted few students were protected locally from dissolution if they were part of the institution's liberal arts core. Furthermore, a fixed faculty budget was established for new degree programs or disciplines until the program became large enough to permit the student demand principle to operate. Once the total number of faculty required by the institution had been generated by the WTU faculty staffing formula, a small percentage of positions was set aside for the mandatory salary savings target imposed

by the state, a reserve for opening new classes at registration, and a reserve for mid-year adjustments. The remaining faculty positions, representing in most years approximately 85-95 percent of the total faculty budget, were then allocated to the schools on the basis of two analyses which measured either directly or indirectly student demand for courses and degree programs.[1]

Although the ASN methodology was extremely complicated, it is worth outlining the procedure as described for use in modified form in the FY 1972-73 cycle:

> Two analyses, performed in the Fall Quarter of the academic year, are used to determine the number of teaching faculty positions to be allocated for the next academic year (Apparent Staffing Need). The first analysis, termed the Audit, estimates current student "demand." The second analysis . . . projects enrollments for the following academic year.
>
> I. The Audit Analysis
>
> For each Department and Program the audit includes two components: (a) The number of teaching faculty generated by Fall Quarter enrollments; (b) The actual teaching faculty used by the Department in the current Fall Quarter.
>
> The Fall three-week census (mid-term class load report) records the Fall Quarter student enrollments. The California State College Staffing Formula (revised 1967), with modifications (to be described below) is applied to the enrollment yielding the number of course sections that theoretically could have been offered to meet the actual student demand. Weighted teaching units are calculated [weighted teaching units (WTU) = course sections x course units x k-factor] from the number of course sections generated by the staffing formula. These WTU, when divided by 12 (equivalent to a full teaching load for one quarter), yield the number of faculty positions "generated" by application of the staffing formula. Modifications of the staffing formula (indicated above) are the following:

(1) Minimum enrollments for single section courses are increased from 10 to 13 for lower division courses and from 7 to 10 for upper division courses with no change in graduate courses. These were mandated system-wide changes not devised at the local level. On this campus the "13-10-5" rule has been modified to read "13-10-5 or 1/3 of the breaking point, whichever is less." This modification benefits lower division courses having a staffing formula breaking point lower than 50.

(2) The breaking point as defined by the staffing formula is divided into the enrollments of individual courses in calculating the number of theoretical sections that could have been taught. This departure has been mandated by the loss of faculty positions (15% in 1971-72) due to the unilateral abandonment of the traditional formula by State Finance. For example: In a given course, 13 students over the breaking point (50 + 13 = 63) are required to justify a second section if the course is in the lower division; 10 students over a breaking point (50 + 10 = 60) are required to credit a second section if the course is upper division; and 5 students over the breaking point are required for a second section if the course is at the graduate level.

The second component of the audit is the determination of the actual number of teaching faculty positions (man-quarters) used in the classroom, exclusive of administrative time.

The components of the audit are then compared: (1) the faculty figure generated by the application of the staffing formula with (2) the actual faculty used. If the faculty-generated figure is greater than the actual faculty-used figure, the given Department or Program was understaffed compared to the student "demand." The converse is likewise true.

II. Analysis of Projected Enrollments

The second analysis performed in the Fall Quarter projected enrollments for the 1972-73 academic year: Changing student attitudes regarding degree preference and changes in General Education requirements obviously influence the growth of Departments. Unfortunately, attitudinal changes are often unpredictable and are difficult to quantify. The

fluctuating nature of our enrollments reflects in part the above variations. Therefore, the choice of a simple graphic extrapolation was not only expedient but was considered to be at least as reliable as a highly sophisticated statistical method. Both Fall Quarter and annual student enrollments were used for the prior three years, including the enrollments for Fall 1971. Enrollment trends based on annual values and an enrollment trend based on Fall Quarter values were compared. If these deviated, an average was made between the two in projecting the 1972-73 annual student enrollments.

Following is the procedure for the growth analysis: The overall Departmental change is assumed to occur in each course offered by the Department. These enrollments in turn generate faculty positions using exactly the same criteria and procedures as noted above in the audit analysis, therefore no repetition is needed.

The net change in faculty positions generated by the analysis of projected enrollments when added to the number of faculty generated by Fall Quarter enrollments (Item A under Audit Analysis), will yield the total number of faculty positions (Apparent Staffing Need) which a given Department apparently needs in the next academic year.

This completes the Apparent Staffing Need phase of the faculty allocation. The sum of these needs for the Departments and Programs within a School represents an allocation measure or weighting between itself and the other Schools. At this time, it should be strongly emphasized that in no way is the Dean of Academic Planning trying to determine the precise number of faculty positions that each Department should have. These specific decisions are left to the Deans of the Schools.[2]

The academic planner had to perform a balancing act to reconcile the Apparent Staffing Need generated for internal use with the WTU staffing formula totals generated for external use in budget requests to the systemwide office. Because the WTU formula-generated request was submitted 18 months

prior to the beginning of the fiscal year, the academic planner always worked with the ASN figures. Such data were more recent and gave a more realistic estimate of faculty needs than did the WTU formula. Of course, the ASN figures always had to fit within the WTU formula-generated total. This meant that constant adjustments were made in ASN estimates between the time the governor's budget was released (usually January) and July. If the ASN figures did not agree with the WTU formula figures, which until FY 1971-72 were accepted at face value by the Department of Finance, across-the-board pro rata additions or deletions were made internally to reconcile the totals.

The ASN method was not as rigid as it might first appear. Negotiations were undertaken among the schools in accordance with two overriding priorities: (1) the need to protect certain ongoing programs and (2) the need to protect tenured faculty. But the ASN approach did discriminate against multiple-section courses because it modified the breaking point concept. This uneven treatment tended to create conflict between schools and even between departments within the same school. For example, considerable tension was generated within the School of Science. Most of the sciences required only single-section courses, while math and statistics had many courses with multiple sections. Consequently, the math and statistics departments complained that they were understaffed, especially in comparison to their colleagues in the sciences.

Although ASN was employed through FY 1972-73, its demise was brought about by the Department of Finance's abandonment of the WTU formula. Whereas the WTU faculty staffing formula generated an overall S/F ratio of 16.4:1 for Hayward for FY 1971-72, the actual allocation of faculty made by Finance was on the basis of an 18.9:1 ratio. However, in FY 1971-72 less-than-anticipated student enrollments and a decrease in the average number of units taken by each student enrolled both contributed to a drop in FTE enrollment below that for which Hayward was budgeted. Although approximately 40 faculty positions

were actually returned to the state in the fall of 1971, Hayward had a FY 1971-72 overall ratio of approximately 17.5:1 rather than the budgeted 18.9:1.[3]

Hayward's academic planner was especially fond of the old WTU faculty staffing formula. As long as enrollments were growing, the formula gave a rich faculty staffing pattern. There was no competition among departments for scarce resources; enrollment increases naturally generated increased funding levels. Furthermore, each department "earned" its own resources depending upon enrollments. In the case of programs that did not grow, the formula projected a constant level of funding. Overall, the campus felt that it received its fair share of the state university and college resources.

The Maximum Intrinsic Ratio Concept

Since FY 1971-72 Hayward has been plagued by two trends: (1) a decline in FTE enrollments and (2) a shift in students from lower-cost liberal arts programs to higher-cost, more career-oriented programs. As the academic planner notes:

> The problem generates from the fact that, in general, liberal arts programs carry an inherently higher student faculty ratio than do professional programs. In some of those currently most popular, the ratio may be as low as one-third of that in other programs, for example, History or Sociology. Therefore, the shifting of one faculty position from liberal arts to a professional program does not solve the problem of carrying an overall University FTE, since non-existent faculty positions would have to be added to the reallocated position if the professional program were to instruct the same number of FTE that was moved from the liberal arts to the professional program. In other words, the overall campus student faculty ratio would have to be lowered to accommodate the student movement from low cost to high cost programs. Unfortunately, this shift has begun at a time when the budget is insensitive to such shifts.[4]

As a result of this predicament, budgeters at Hayward developed a new internal allocation scheme based upon the Maximum Intrinsic Ratio (MIR) concept.[5] MIR is based upon a recent analysis of faculty utilization, which determined that if Hayward had attained its 1972-73 budgeted FTE students, the average class (including all modes of instruction except supervision) would have filled 80.5 percent of its seats with enrolled students. As mentioned previously, Hayward's budgeted FTE student enrollments for that year exceeded the actual enrollments. Few programs have ever reached the 80.5 percent mark. Prior to 1971-72, when actual enrollments either equalled or exceeded budgeted enrollments, Hayward had reached only a 70 percent level on a campus-wide basis.[6]

The MIR is the number of FTE students generated per faculty position when a course is filled to its breaking point enrollment. Hayward must target all departments, on the average, at 80.5 percent of MIR for each course in order for the institution to fall within its budgeted SCU/FTEF ratio (which is reasonably similar to the FY 1972-73 ratio, because the ratios are being held rather constant by Systemwide). Some departments must be targeted at a lower percentage of MIR for pedagogical reasons; to balance this, some departments must be targeted at a figure greater than 80.5 percent for the campuswide FTE to be attained. Realistically, this campuswide target of 80.5 percent of MIR is a goal--one that is extremely difficult to attain. Thus, the academic planner measures the departmental need for faculty on the basis of a comparison of the target ratio with the most recent actual student-faculty ratio. Adjustments are made among departments in a school because the school MIR is held constant.

MIR is a more refined way of allocating funds than was ASN because it is sensitive to the single FTE student, whereas ASN was sensitive only to the minimum class enrollment. One of the advantages of MIR for the academic planner is that it anticipates overstaffing in a discipline. MIR has also been accepted internally by the faculty members because they can work the formula

themselves and use it as a political weapon against other departments in the resource acquisition game. There is some discomfiture with MIR because it is brutally effective in controlling staffing patterns--as one observer noted, "Some departments don't like to be told by a computer printout what is a good education." The tight funding situation has increased the level of competition among departments, especially those that are overstaffed and understaffed. Understrength departments complain that they can no longer offer "complete" programs and are extremely resentful of losing their faculty positions to new and growing departments. Some departments do not receive even the number of positions that MIR determines they deserved, simply because Hayward does not receive enough positions from Systemwide. MIR may be repressive; resources for new programs, which are usually more expensive than ongoing programs, must be taken from the budget base and hence from existing activities.

The major difficulty faced by budgeters at the campus level in the California State University and Colleges system is working within the constraints of the new SCU/FTEF procedure on the one hand and of the old WTU faculty staffing formula on the other. Because faculty are still responsible for teaching 12 WTU, on the average, the modes of instruction are still weighted according to the old staffing formula (with minor modifications in such factors as class limits and breaking points). MIR is an attempt to work within the WTU system while essentially holding constant the overall campuswide SCU/FTEF ratio. The translation between the two budgeting systems must be made by each campus individually. At Hayward, the responsibility for translation falls on the academic planner; matters related to the SCU/FTEF procedures seldom go below this level to the academic deans. The SCU/FTEF ratios for the campus and the individual disciplines become the bounds within which the MIR concept is applied. This relationship demands that the MIR procedure be sufficiently flexible to fit within the constraints; thus, MIR is in fact a set of rough guidelines, despite its

surface complexity, within which the academic planner and the deans adjust the staffing patterns.

SAN JOSE STATE UNIVERSITY

San Jose State University is the oldest campus (founded in 1857) in the California State University and Colleges system and the first public-supported institution of higher education in California. The campus is an urban institution located in downtown San Jose and draws a large part of its clientele from that city. The University is divided into eight schools--business, education, engineering, applied sciences and arts, social sciences, science, humanities and arts, and social work--and offers 136 undergraduate and graduate majors. San Jose's FTE enrollment has grown rapidly from 10,739 in 1959-60, for example, to 20,177 in 1972-73.

Internal Budgetary Procedures under SCU/FTEF

San Jose has not had as elaborate an internal allocation scheme as Hayward. One of the reasons is undoubtedly size. San Jose has had double the FTE student enrollment of Hayward in recent years and is still growing at a slow rate, while Hayward is suffering declining enrollments.[7] The larger size and higher funding level afford San Jose more flexibility in its internal allocation process. A second reason is the decisionmaking structure at San Jose. Fiscal decision authority for the academic (instructional) budget area resides in the office of the academic vice president; budget decisions are more closely tied to individual discretion than to a formula structure, as at Hayward. The academic vice president allocates faculty positions among the schools on the advice and recommendation of the deans, who have a significant level of influence in the Council of Deans. The academic vice president does suggest allocations to the departmental level but does not force the issue with the deans--the deans receive a lump sum FTE total for their school.

Departmental chairmen initiate the budgetary cycle with budget requests to the school deans. Departmental justifications focus on the number of sections to be taught, the enrollment patterns within the department (i.e., percentage growth of FTE enrollment by program and department), and information on new program development. Although most observers at San Jose argue that the old WTU staffing formula is "dead" on that campus, it is very much alive at the departmental level. Department chairmen must still base their budget needs on the 12 WTU faculty workload norm and the modified classifications of modes of instruction underlying the old WTU formula structure. The process at the departmental and school levels is slightly different under SCU/FTEF than under the WTU formula; now the emphasis is on FTE students. (As one dean noted: "The name of the game is FTE students.") But most school deans have not yet begun to think in terms of SCU/FTEF ratios. In fact, many of the faculty staffing decisions made at the dean's level appear to be highly judgmental, based upon trust relationships between dean and department chairmen, departmental historical enrollment trends, and the personalities of the faculty members (i.e., Is Professor X a big attraction?).

The budget requests are submitted by the school deans to the academic planning office (the analytical arm of the academic vice president) and to the academic vice president. The requests are negotiated on the basis of the three-year SCU/FTEF ratios for each discipline, as supplied by Systemwide. Ratio changes are negotiated by the deans and the academic planning office; changes approved are justified by the academic planning office for inclusion in the institutional budget request to Systemwide. The advantage of the SCU/FTEF methodology is that the academic planning office can break down the Instruction budget area by discipline; that is, it is easier to explain program differences within a discipline category. Observers also noted that the SCU/FTEF system provides

more information than did the WTU procedure. Consequently, there is a closer control and better utilization of resources under the present system.

San Jose State University accepts the governor's budget as a good preview of its resource base for the coming fiscal year. Moreover, San Jose uses the governor's budget as the basis for a more detailed set of budget request instructions that is sent to the schools. Apparently the initial budget requests submitted by the departments and schools are not highly detailed breakdowns; instead, the business office waits until the governor furnishes a better idea of what the resources will be before requiring the budget units to shake down their original requests into more operational terms. This is particularly true of the nonacademic parts of the budget, which are still controlled by formulas (e.g., physical plant).

The state resources are appropriated in programs. Approximately 75-80 percent of the operating budget is for the instruction program and is allocated to the departments by the Budget Advisory Committee. There is very little discretion in allocating instructional resources because the departments know how much their "fair share" should be as a result of interdepartmental communication. Campuswide support resources (e.g., travel, overtime, specialized training) are also allocated across the institution by the Budget Advisory Committee. Although there is more flexibility in distributing the latter resources, the total dollar amount is not large.

Long-Range Planning and the Budgetary Process

Beginning with the FY 1975-76 budgetary cycle, San Jose attempted to better integrate program planning with the budgetary process. The action was largely in response to the inevitable tension which exists between the academic planning office and the business affairs office. San Jose's dean of academic planning describes the problem as follows:

> Over the past several years Department Chairmen have expressed departmental goals and requested the resources necessary to fulfill those goals through responses to detailed budget instruction letters circulated to each academic program by the Office of Business Affairs. Each year's request for a proposed budget for the University from the Department of Finance has required an increased level of familiarity on the part of Department Chairmen with technical budget detail, revised forms and budget jargon. The result has been that, increasingly, department chairmen have had to devote more energy to the technical part of the process, leaving less time and energy for the program planning job.[8]

The academic planning office is seeking to translate the internal budget procedures from the traditional business-oriented nomenclature to an academic nomenclature that faculty and department chairmen can more easily appreciate.

The program planning procedure gives more of the technical job of developing budget requests to the technically-oriented staff (i.e., business affairs and academic planning) and permits the department chairman to concentrate his efforts on the description of his program's needs in program terms rather than budgetary terms. The department chairman is supposed to make a general evaluation of his program (including planning changes in the basic characteristics of the program), establish longer-range goals for the program, and make changes in the distribution of resources that will be required to reach these goals. These annual evaluations will then be reviewed by the school dean and the academic planning office. The overall intent is to ask each department chairman before he prepares elaborate justifications: Where do you want to be in the future? The academic planning office can review these plans first to determine whether or not they are realistic both in terms of projections for the department or school and for the institution as a whole. If the plans are unrealistic, the academic planning office can so inform the department before expectations have been inflated.

The Office of Business Affairs views the new procedure with a certain amount of (probably justifiable) skepticism. The planning process backs up the budgetary cycle from its present 17-18 month lead time to a lead time of 21 months. As matters now stand, departments do not receive sufficient information from Systemwide and the state level until approximately 15 months prior to the beginning of the fiscal year. Thus, the plans will not be based on more reliable information. Secondly, the advance planning may be severely constrained by budgetary formulas (in the nonacademic programs) and by SCU/FTEF ratios in the instructional area. There is little room for discretion left after the formula-driven and quasi-formula-driven parts of the budget are funded.

The internal allocation at San Jose remains extremely judgmental partly because the campus is not faced with the same enrollment patterns which plague Hayward. As of 1975, there were not any dramatic shifts in student demand, especially from the low-cost liberal arts programs to the high-cost, professionally-oriented areas. Even if such shifts occur, it is not clear that the campus administration would move faculty resources to meet the student demand. The academic vice president's first priority is undergraduate education, especially in the liberal arts. That being the case, several schools may be protected as much as possible if such student shifts or enrollment declines materialize.

FOOTNOTES

Chapter 4

[1] California State College, Hayward, Memorandum. TO: All Faculty; FROM: George H. Peterson, Dean, Academic Planning; SUBJECT: Allocation of Faculty Positions, 1972-73 Academic Year; April 26, 1972, pp. 1-2.

[2] Ibid., pp. 2-4.

[3] California State University, Hayward, Memorandum. TO: Deans, Associate Deans, and Department Chairmen; FROM: Maurice Dance, Vice President, Academic Affairs, and George H. Peterson, Dean, Academic Planning; SUBJECT: CURRENT AND FUTURE PROBLEMS WITH FACULTY BUDGETS AND THE DEVELOPMENT OF THE MAXIMUM INTRINSIC RATIO CONCEPTS; January 10, 1973, p. 2.

[4] Ibid., p. 3.

[5] See Appendix D for a more detailed description of the MIR concept.

[6] California State University, Hayward, Memorandum. TO: Deans, Associate Deans, and Department Chairmen; FROM: Maurice Dance, Vice President, Academic Affairs, and George H. Peterson, Dean, Academic Planning; SUBJECT: CURRENT AND FUTURE PROBLEMS WITH FACULTY BUDGETS AND THE DEVELOPMENT OF THE MAXIMUM INTRINSIC RATIO CONCEPTS; January 10, 1973, p. 3.

[7] In FY 1973-74 San Jose was budgeted on the basis of an academic year enrollment of 20,943 FTE, whereas Hayward was budgeted on the basis of 10,200 FTE. In the FY 1974-75 Trustees' Budget Request San Jose's enrollment had been projected at 21,453 FTE, while Hayward's enrollment had been projected at an optimistic 10,200 FTE.

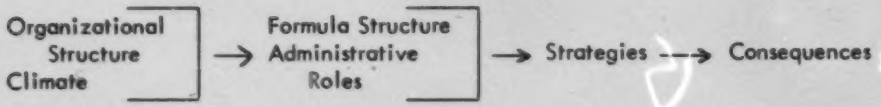
[8] California State University, San Jose, Memorandum. TO: Department Chairmen; FROM: Dr. Ted W. Benedict, Dean of Academic Planning; RE: Program Planning During the Present Budget Cycle; November 12, 1973, p. 1.

5.

Strategies, Consequences, and Uncertainty Reduction: Varieties of Formula Budgeting Behavior in California, Illinois, and Texas

THE CAUSAL CHAIN OF VARIABLES

A convenient focus for the comparison of budgetary behavior are the strategies adopted by the various levels and the consequences of these strategies as felt by the budgetary actors. It was assumed that budgetary strategies would be influenced directly by both the formula structure and administrative roles undertaken by the actors and indirectly by organizational (and interorganizational) structure and the state's climate, as summarized below:



Formula budgeting strategies are best understood when examined over a number of years. A formula is essentially a static device within any single budgetary cycle; the context of formula usage is difficult to appreciate without the perspective offered by a broader sweep of time. The analysis developed here uses the historical details of formula budgeting in three states to illustrate a

fundamental principle of organizational behavior: All organizations or levels within a system seek to reduce the uncertainty stemming from sources in the environment by adopting certain strategies which are designed to work to the advantage of the focal organization. The particular strategies adopted are the result of organizational perceptions of environmental conditions. Despite the different environments for the budgetary process and the resultant variations in strategies found in the three states, two modal tendencies can be identified: 1) the shifting of uncertainty to other organizations and 2) the development of organizational slack to accommodate possible future exigencies. Each strategy is in fact comprised of several more categories, each of which is an example of the more generic strategy. These categories will appear in the subsequent analysis.

Just as the modal formula budgeting strategies are devised to reduce uncertainty, so do the parallel modal consequences reflect changes in the degree of uncertainty for the actors in the budgetary process. Moreover, the consequences follow quite naturally from the strategies with two modal consequences having been identified: 1) shifts in the locus of budgetary control and 2) changes in the balance of slack resources at each level. It is assumed that the more numerous the contingencies and the less control the level maintains over the budgetary process relative to other levels, the greater the uncertainty confronting that level. Control is loosely defined here as the capacity to initiate action at will--in a relative rather than an absolute sense. Thus, for example, the locus of budgetary control shifts whenever a different actor succeeds in taking the initiative. Moreover, changes in the amount of excess resources available to a level are intimately tied to changes in the locus of control. To take the initiative is to reduce one's uncertainty. It is better in that sense to force elements in the environment to react to your actions rather than vice versa. The more slack that is available to a level, the less that level must

seek the initiative because of its buffer against existing uncertainty.

The consequences of the strategies in the context of the California, Illinois, and Texas budgetary processes can be examined in terms of changes in the locus of control in the higher education sector and in the pattern of incentives created by either formula structures or budgetary policies. In particular, one consequence of a level's strategy is typically a counterstrategy employed by the opposing level. Therefore, attention is directed toward the strategic interaction between successive levels in the higher education systems: staff-level (i.e., executive budget office and legislative fiscal staff)--coordinating agency-level interaction; coordinating agency-level--institutional-level interaction (or the state-level--institutional-level interaction where no influential coordinating agency exists); and institutional-level--school-level interaction. The analysis of successive levels is somewhat imbalanced in the sense that, except for the California case, there is very little evidence of institutional-level--school-level interaction, primarily because statewide budgetary formulas are not used within the institutions. Moreover, multicampus system-level strategies usually appear to be consolidations of individual institutional strategies. Because these two levels' strategies are difficult to differentiate, the institutional-level activity is used as the point of reference unless evidence to the contrary exists.

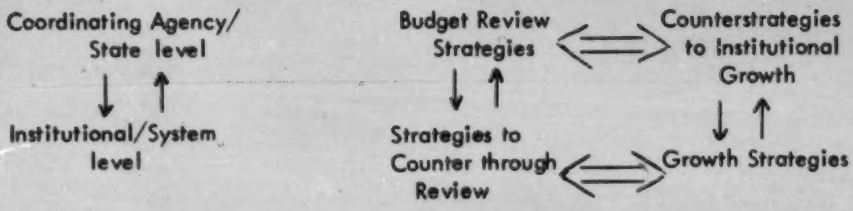
The observed strategies are classified below, according to the level which employs the strategy and the intent of the strategy. Each strategy will be discussed in the subsequent analysis.

LEVEL	STRATEGIES
Coordinating Agency/State Level	Budget Review Strategies and Counter-strategies to Institutional Growth
	Funding Delay
	New Program Control
	Reallocation Targets
	Base-Reduction Targets
	Budget Ceilings
	Productivity Reductions
	Management Audits
	Reduced Tolerances on Enrollment Projections
	Introduction of New Formula
Institutional/System Level	Growth Strategies and Counterstrategies to Thorough Review
	New Course and Program Expansion
	Padding
	Formula Manipulation
	Formula Enrichment
	Funds from External Sources
School Level	Strategies for Gaining Slack
	Skimming
	Use of Assigned Time
	Use of Temporary Faculty Positions

STRATEGIES AND CONSEQUENCES

Coordinating Agency Level (or State Level)--Institutional Level (or System Level) Interaction

Much of the interaction between the coordinating agency level (Illinois) or state level (California and Texas) and the institutional level might be summarized by the following diagram:



Most coordinating agency and state-level staffs have a repertoire of techniques which they use to review institutional budget requests. Similarly, officials at the institutional level have means--here termed strategies to counter thorough review--for presenting the budget request in the best possible light. A coordinating agency strategy might involve, for example, the identification of all nonrecurring items in the previous cycle's budget to insure that they were not being carried forward. At the system level, the University of Illinois, for instance, recently sought to obscure the identities of the separate campuses in the budget request by labeling itself an "organic university." The University was attempting to justify a common salary structure for all of its campuses by deemphasizing the differences between the Chicago Circle and Urbana campuses.

Just as institutions will seek to foil higher-level budget review, so too will they be motivated to expand their budgets. Institutional growth strategies, in turn, spawn coordinating agency and state-level strategies aimed at controlling the enlargment of the budgets. From the coordinating agency or state-level perspective, the distinction between institutional-level evasive counterstrategies and growth strategies becomes blurred; likewise, at the institutional or system level, higher-level budget review strategies and counterstrategies to institutional growth seem synonymous. For the purposes of analysis, therefore, all such actions are lumped into the categories of growth strategies and counterstrategies.

Institutional Growth Strategies. The "spender" role of colleges and universities expanded from the late 1950's through the late 1960's as the institutions worked to overcome constraints imposed by funding formulas by employing a number of aggressive growth strategies. (Much of the growth in resources came through regular enrollment increases, but some of the growth was manufactured.) Not all of the strategies identified were used by institutions in each of the three states, although most were employed. More importantly, the strategies used and the consequences which followed are all examples of the modal patterns described earlier; moreover, the strategies were successful to varying degrees. No attempt is made, however, to compare the relative successes of the strategies.

New Course and Program Expansion Strategy. The expansion of academic offerings was, until recently, a slightly more obvious strategy in California and Illinois than in Texas. A common tactic in all three cases--and not necessarily a characteristic of only the states using budgetary formulas--was for institutions to "come in the back door" to the coordinating agency or state-level program-review authorities with an accumulation of courses representing a new program, more or less a fait accompli. Such new program requests usually did not solicit new resources explicitly, because these additional funds had already been worked into the budget with the gradual aggregation of new courses. This tactic was difficult to police.

The California State Colleges had de facto control over the proliferation of courses and programs in the 1950's; moreover, the WTU faculty staffing formula rewarded institutions more on the basis of increased offerings than on increased enrollments. Specifically, the lack of agreed-upon guidelines describing what constituted an approved program or course led to some of the uncontrolled growth. Moreover, new courses and programs, once officially approved, could

be included in the formula calculations without having had enrollment histories--first-time enrollments were simply estimated.

In Illinois, the extension of existing programs through the addition of new courses was controlled at the institutional level. A persistent problem in terms of total numbers was "innovations of a reasonable and moderate character" that, under Illinois Board of Higher Education regulations, did not need to be approved. The most frequent extension of existing programs was the addition of new courses. The proliferation of courses tended to favor the Illinois institutions because the S/F ratio (the basis for funding between 1963 and 1967) became richer and the institutions' unit costs for instruction (the basis for funding after 1967) increased.

On the other hand, the incentive structure of most of the Texas formulas is and has been based more upon faculty productivity, as measured in semester credit hours. Thus, the proliferation of courses would create a need for additional faculty, but unless the classes were filled at existing S/F ratios so that the faculty could maintain, on the average, the standard of productivity used in the funding formulas, the institutions might actually lose resources. Nevertheless, Texas has a tradition of strong political involvement in the budgetary process, and it has not been unusual for new and expanded programs to be worked into the budget in areas outside of the formula jurisdiction.

Institutions in Texas (and other states, too) are currently faced with the prospect of shrinking enrollments--and hence declining resources--in the traditional on-campus programs. Spurred by the formulas' incentive structure which equates increased student credit hour production with increased funding, the institutions are now competing fiercely with one another for additional students through off-campus modes of instruction. Until recently, off-campus instruction was distinguished as extension work and was not financed through the formulas,

but on a self-supporting basis. Since student credit hours produced in off-campus instruction have been allowed to be credited against the formulas, there has been a gradual, as-of-yet unchecked, increase in the production of off-campus resident credits.[1]

The identification of expansion strategies is not to argue against the pedagogical merits of such expansion. In some cases the efforts were attempts to meet more specialized student demands, and in others were attempts to increase educational quality. The point is that tighter control of program and course review would have prevented many courses and programs from slipping in between the cracks.

Padding Strategy--Asking for More Than the Formulas Generate. The most direct method of acquiring surplus resources, or amounts in excess of what the formulas generate, is to request them. Institutions in Texas, for example, are permitted to exceed the formula guidelines in requesting resources if the need can be adequately justified. The chances for success are extremely narrow, yet a good argument can win an exception to the uniformly-applied formulas. As previously noted, the Texas public senior institutions requested $42.8 million above the formula-generated ceilings for the 1971-73 biennium.

Perhaps the most difficult decision facing institutional-level budgeters desiring slack resources is where to hide the request for the additional resources. The California State Colleges seldom faced this decision, for their needs in the faculty staffing area were normally satisfied through manipulation of the WTU staffing formula. Illinois, however, provided some good examples of the art. One standard way to disguise a request for surplus resources was to justify the request on the basis of a formula different from the certified one. In all instances, however, the Board of Higher Education staff defended the formula and recommended that the institutional requests be trimmed to fit the formula-generated

totals.[2] The most common ploy used to circumvent budgetary formulas is to seek additional resources for instructional areas under categories such as "Special Items" or "New Programs and Improvements." The University of Texas at Austin was, for example, able to fund the entire LBJ School of Public Affairs as a Special Item line, thus avoiding all funding constraints imposed by the formulas.

A standard tactic used to generate some reserve resources is to substitute graduate assistants for faculty members. Institutions in Illinois used to include graduate assistants in new program requests or request the assistants as discrete items. The basis for such requests was often an internal (institutional-level) formula. For the 1965-67 biennium budget request of the Teachers College Board, the net effect of such requesting formulas was that the number of regular assistantships available at two institutions exceeded the enrollment of full-time graduate students! Needless to say, the Board of Higher Education disallowed these requests, for two reasons: assistantships should be given only to those students who show above-average competence and the number of graduate assistantships available should not be a function of the total number of faculty members in the institution, a number largely dependent upon undergraduate enrollments.[3]

Finally, one can uncover examples of what might be termed "honest padding," or padding which is approved by coordinating agency or state-level budget review staffs. One such margin of safety was built into the 1965-67 institutional requests in Illinois with the approval of the Board of Higher Education.[4] The potential slack stemmed from the emphasis on increases above the then-current expenditure level; this emphasis, in turn, was grounded in the assumption that all the expenditures of the current biennium were recurrent. Typically, actual expenditures fall short of planned spending because of an inability to fill some budgeted positions, the unavailability of needed equipment and supplies, and numerous other reasons. Moreover, some expenditures are nonrecurrent. The padding was derived, therefore, from a purposeful inattention

to the natural savings which accrue from most expenditure plans and from non-recurrent expenditures.

The padding strategy is characteristic of most budgetary processes, as Wildavsky has noted.[5] Padding is part of the pattern of expectations which grows out of the interaction between spending agencies and the guardians of the treasury. That is, spending agencies expect to have their budgets cut and pad the requests so that the reduced budget still provides all of the needed resources. Review agencies anticipate inflated requests and counter the strategy with budget reductions. The equilibrium which results from these strategies after several budgetary cycles is evident in situations where budgetary formulas are used. Some qualifications are in order, however.

In a formula system an institution can request additional resources without fear of an overreaction--that is, an overreduction--at higher levels, because the formulas generally establish an agreed-upon minimum level of need. Theoretically, the institution will always receive at least what the formulas generate, and perhaps a little more. The responsibility then falls on the reviewing agency to determine whether the request for additional resources is justified. The reviewer can always fall back to the formula-generated level as an aid to calculation, yet there is considerable pressure to review each case on its own merits. After all, formulas are mechanical devices designed for use in a number of diverse situations; institutions have their unique features, and at the margin the question of deviations from the formula must be answered judgmatically. In this sense, therefore, uncertainty is shifted from the institutional level to the reviewer.

The exception in the three cases under consideration is the budgetary process in Texas. The Legislative Budget Board and Executive Budget Office staffs make their recommendations more on the basis of projected revenues than on formula-generated totals. In fact, there is no expectation at either the

institutional level or the state-level that the Coordinating Board-certified formulas will be funded at 100 percent; it is usually the case that the state appropriates resources at less than 100 percent of formula. At the same time, however, the institutions can request resources over and above the formula totals. Thus, the process more closely fits the pattern of expectations described by Wildavsky--a dynamic equilibrium wherein uncertainty is shared by both the institutional and state levels--than the situation in which there is some obligation for the state to fund the formula-generated amounts.

Texas does deviate, in one sense, from the characteristic budget padding/cutting pattern of behavior. While the pattern is observed in the interaction between institutional-level requestors and state-level reviewers, it is missing in the establishment of the formula rates by the Coordinating Board and its advisory committees. That is, the formula study committees and the Coordinating Board staff know from experience that the Legislative Budget Board and Executive Budget Office usually recommend funding at lower formula rates than approved by the Coordinating Board for use in preparing the institutional requests, yet the committees do not inflate their recommended rate structures to anticipate the state-level reductions. The formula rates recommended to the Coordinating Board represent a realistic estimation of institutional needs--the Coordinating Board may adjust the rates (either upward or downward) after making an assessment of what will "sell" at the state level, but even an upward adjustment rarely compensates for the state-level proposed cuts. As a result, the responsibility for neutralizing these reductions and for satisfying special needs beyond those covered by the formulas lies with the individual institutions.

Formula Manipulation--Deception Through Adjustments in Formula Structure or Data. The degree of formula or data manipulation in the higher education sector depends largely upon the amount of flexibility enjoyed by the

institutional level in applying the formulas, the effort spent by coordinating agency or state-levels in monitoring formula uses, the existence of alternative sources or means of acquiring slack resources, and whether historical or projected data bases are used. Texas evidenced the least manifest manipulation of the formula structures and data of the three cases investigated. There is no evidence of course credit inflation or of an increase in the student credit hour load per graduate student, for example. One institution was reported to have inflated its production of masters-level student credit hours, but this use was discovered during a Texas Commission on Higher Education audit of student credit hour outputs. Periodic checks of institutional productivity records by the state audit agency undoubtedly discourage deceptive reporting practices.

On the positive side, there is some indication that institutions have improved their enrollment reporting systems to maximize their funding levels. Historically, the University of Texas at Austin had been lax in its procedures for graduate student registration--graduate students had been allowed to make their final course selections at a later date then undergraduate students. Enrollments for funding purposes are reported as of the twelfth day of classes, which left many graduate students unaccounted for in the final tally. As a result of a tighter control of graduate student enrollment reporting procedures, the University of Texas at Austin increased its appropriations. A second means by which institutions in Texas have increased their appropriations, though in a questionable fashion, has been to shift courses from formula program categories with low rates to programs with higher rates. There are, however, few opportunities for this tactic. Under the present Coordinating Board program typology, some courses have multiple listings; computer science, for example, is listed under liberal arts, engineering, and business administration. The incentive for the institutions has been to put computer science under engineering, which draws a higher formula rate. To prevent the evolution of these overlapping program categories,

the Coordinating Board is preparing to switch its program typology to the HEGIS taxonomy.

The most common manipulative tactic used by institutions in Illinois was the overprojection of enrollments. Prior to the 1965-67 biennium there was no arrangement for the "payback" or lapsing of funds when enrollments fell short of expectations. At least two institutions--Southern Illinois University and Western Illinois University--appear to have gained extra resources through this loophole.[6] The Illinois Board of Higher Education eventually imposed a payback system for underenrollments. Although some institutions were judged guilty of overprojecting enrollments, even most of these projections were too conservative during the growth era of the 1960's; projections made nearly two years in advance were usually outstripped by the actual enrollments.

One potential tactic--suggested by a former executive director of the Illinois Board of Higher Education--which might have been used by the institutions was the misrepresentation of the number of students at each level, especially reporting more students at higher levels than actually were enrolled. Because the average unit costs were greater at higher (e.g., Graduate I and Graduate II) levels, larger student enrollments at these levels entitled an institution to more resources. The tactic would surely have worked, at least in the short run, for there was no means for auditing an institution's enrollments during the 1960's. In the long run, however, an increase in the number of students at a given level can tend to decrease the average unit cost at that level and hence reduce the institution's level of funding.

In addition to misrepresentations of actual and projected enrollments, institutions in Illinois manipulated certain expenditures in order to inflate the budget base used in constructing the subsequent biennium's budget. Until 1969, salary increase packages, for example, were appropriated for a biennium. A technique employed by some institutions was to expend more for salary increases

during the second year of the biennium than in the first year so that the institution could have a larger "base" in the second year on which to justify a request for additional resources for the next biennium.

Formula manipulation was widespread in the California case. The California State Colleges did not attempt to manipulate the WTU faculty staffing formula immediately after its introduction in 1953; during the first several years of formula application the generation of slack was largely an "unplanned" outcome of the formula structure. It was difficult to project both course enrollments and modes of instruction 18 months in advance. Once the budget requests were submitted, the colleges continually revised these projections for internal management purposes. Inevitably, the colleges managed to acquire more faculty positions than they intended to use as of the beginning of the fiscal year. These "extra" (in the sense that modes of instruction had been revised to handle the same number of projected students with fewer faculty) positions, or slack, found several uses. First, they were used to cover overenrollments, a common occurence in the late 1950's through the 1960's. Supplemental appropriations were made to correct underfunding, but the time lag meant that reserve resources had to be committed in the meantime. Secondly, the positions were used as discretionary resources to create experimental courses, lighten faculty workloads on a selective basis, provide faculty release time for research, and the like.

As the California State Colleges became more familiar with the application of the formula, they consciously began to seek slack through the formula. This was deliberately done by projecting course enrollments that barely exceeded the class breaking points and by projecting courses on the basis of modes of instruction involving small class sizes when the actual intention was to utilize large class formats. The organizational slack resulting from this manipulation continued to be used for the purposes previously discussed, as well as for "bootlegging"--the use of faculty positions for administrative purposes.

Thus, formula manipulation provided a buffer to counter possible fluctuations in state funding in all three states, particularly in California, where it became the California State Colleges' main source of flexibility and their principal hedge against uncertainty. Manipulative tactics did not vanish with the changeover to the SCU/FTEF methodology. During FY 1973-74 San Jose State University, for example, overestimated its enrollments and was faced with a payback of several hundred thousand dollars. To eliminate the lapse requirement, the university increased the credit earned for physical education courses, effectively increasing at a single stroke the institution's student credit hour production to a figure close to what had been projected originally. Naturally, such a short-run tactic provides only temporary relief from the longer-term ailment of shrinking enrollments, yet it exemplifies the influence that a particular formula's incentive structure has on organizational behavior.

Formula Enrichment and Modification Strategy. In addition to asking for additional resources outright, another strategy pushed by institutions to obtain additional resources legitimately is to seek changes in the formula which yield higher levels of funding. The fact that alterations which lead to formula enrichment must have the concurrence of the funding agency gives them their legitimacy. Formula enrichment changes are proposed by both the coordinating agency or state-level and the institutional level, usually in response to a recognized shortcoming, in terms of underfunding, in the formula. However, the institutions will wage extended campaigns for enrichment changes to provide themselves with a source of flexibility, even if they could perform adequately under existing funding formulas.

The Illinois Board of Higher Education under the Browne and Glenny regimes and the Texas Coordinating Board during its entire existence tended more often than not to side with the institutions in seeking to rectify inadequacies in

the budgetary formulas which imposed financial hardships upon the institutions or to afford the institutions some slack resources. Part of this characteristic advocacy can be traced to the extremely close working relationship between the institutional representatives and coordinating agency staffers on the various formula study committees and task forces. In 1966 the Texas Coordinating Board, for instance, made its unsuccessful bid to reduce institutional uncertainty by proposing that formula rate schedules be applied against a projected enrollment or productivity data base. The Illinois Board of Higher Education was more successful in its enrichment activities, primarily because the Legislative Budgetary Commission did not seriously question the Board's budgetary recommendations between 1962 and 1968. Thus, the institutions and the Board (via the Budget Formula Committee) settled upon a special factor for instructional staffing in the first formula (1965-67 biennium) to compensate institutions which offered a higher-than-average number of high-cost programs. The Illinois Board also implemented its program of enriching some institutional budgets by comparing the actual budget bases with theoretical bases.

Improvements in the California State Colleges' WTU staffing formula, on the other hand, were a consequence of heavy institutional-level pressure over a period of several years. The platform used to launch campaigns for the change in K-factor weighting for laboratory instruction staffing and for the graduate level instruction staffing differential was a combination of arguments for improving the quality of educational offerings and complaints of faculty overwork (which made it difficult to recruit faculty in a highly competitive market). The faculty argument was probably the most persuasive because it could be documented to some extent. Nonetheless, the requested enrichments were slow to be approved because the Department of Finance was unsure of the future fiscal consequences of enrichment and did not want to increase the uncertainty in its day-to-day operations by reducing the uncertainty for institutional-level actors.

Institutional-Level Slack from External Sources. When it is not possible or feasible to wring excess resources from the formula-generated portions of the budget, institutions turn to external sources of funding to either augment the state support or to provide some fiscal flexibility to pursue new activities. The most significant external source of funding has been federal support of research. Historically, this source has been a factor only in the larger graduate-level, research-oriented institutions such as the University of Texas at Austin, the University of Illinois at Urbana, and to a lesser extent, at least until recently, Texas A&M University and Southern Illinois University. The California State University and Colleges, without a significant research component, have acquired relatively little potential slack from external "soft" money.

The University of Illinois during the 1960's affords several good examples of the advantages to an institution which enjoys heavy federal funding. Viewed in terms of a larger circular pattern of cause and effect, the University of Illinois first used a formula cost-accounting procedure which ascribed costs for faculty departmental research time to the highest (Graduate II) level in order to justify the University's request to federal funding agencies for additional resources to meet the higher overhead costs. This same cost accounting procedure also inflated the University's program costs and, consequently, its share of state resources. After the accounting methodology was revised, the University's program costs fell more in line with those of other institutions. Nevertheless, the heavy research funding still had an impact upon the state's funding formulas. Graduate instruction and research went hand-in-hand so that, with 85 percent of the state's doctoral-level students, the University of Illinois received a significant amount of state aid to finance graduate training. Secondly, much of the graduate instruction was subsidized by the federal grants through teaching and research assistantships and fellowships. (In a sense, the University was getting paid twice, by the state and the federal government, to support graduate

education.) Thirdly, the large number of graduate assistants employed in the lower and upper divisions through external funding enables the University to offer programs which were cost competitive with those of other institutions.

The University of Texas and Texas A&M have had, and continue to have, a source of external funding in addition to federal research grants--the Available Fund from oil and gas revenues. While most of the appropriations from the Available Fund have gone toward capital costs, a growing portion is being applied toward the "production of excellence" at the University of Texas' Austin campus. Most observers in Texas note the significance of the flexibility which accrues to the Austin campus in the operating budget area: institutional-level administrators are freed somewhat from the requirement to predict, to the dollar, their need of state resources and are able to initiate new programs or fund traditional budget programs at levels above the formula-generated totals.

COORDINATING AGENCY AND STATE-LEVEL COUNTERSTRATEGIES TO INSTITUTIONAL GROWTH

The coordinating agencies or state-level budget review agencies have developed a remarkable repertoire of strategies of their own to counter the natural inclination that institutions (and most organizations) show for growth. Some of the strategies are aimed not so much directly at institutional growth as at the general problem of uncertainty reduction--making the review process more manageable. The objective of review-agency strategies is to make life more certain at the higher review levels by reducing the institutional level's flexibility to initiate action, or to respond to coordinating agency- and state-level initiatives--that is, by increasing the uncertainty for actors at the institutional level.

Delay Strategy

State-level budget review authorities have always played the delaying role, putting off until next year the funding of items requested for this year. One seasoned state-level observer noted that "the expenditure of funds for well justified agency programs is inevitable--it is just our responsibility to put them off as long as possible." The delaying role is a milder version of the "guardian of the treasury" role. The characteristic role requirements of the budget review and funding agencies, when faced with genuine deficiencies in state-agency programs or justified expanded and new programs, lead them to delay remedying these deficiencies, or funding the new programs, for as long as is politically and fiscally (for the spending agencies) feasible. The deficiencies or fiscal pains are eventually either relieved by the funding agency through use of slack resources or through reallocation within the spending agency, or forgotten by the spending agency. Thus, the resistance displayed by the funding agency has a short-term impact upon the institutional level if this year's request is granted next year, but becomes a long-term strategy if the institution drops the request or finances the program from internal reserves. The latter consequence was what the California Department of Finance, for example, had in mind when it blocked for so long the enrichment of the K-factor weighting for laboratory instruction and the use of a graduate-level instruction differential.

New-Program Control Strategy

An effective aid to calculation in budget review is the separation of requests for program improvements and additions from ongoing activities in the budget base. To contain a spending agency's budget growth, the funding agency need only direct its attention to the requests for increments to the base. Moreover, its job is made easier if there exists a built-in restraint to growth in the funding formulas. The formula policies used in California, Illinois, and Texas

for new-program control represent a full spectrum of methodologies. In all three cases, the control of the new and expanded programs required a two-step decision process: Should the requests for additions to the budget base be approved, and if so, at what level should they be funded? The first decision must be handled judgmatically, but the second can be made with the assistance of a formula structure.

Under the California State Colleges' WTU faculty staffing formula new courses (and conceivably a new program) could be included in the formula-generated request. Enrollments for the expanded areas were projected according to the course's mode of instruction, with no historical enrollment pattern required. This policy gave the institutions considerable freedom to expand their budget bases and the flexibility to design the curricula as they saw fit. The SCU/FTEF formula, however, provides none of the same flexibility. New and expanded programs must be funded through the internal reallocation of resources or the rarely used appropriation for a Special Item.

The Illinois Board of Higher Education maintained a stricter watch over the expansion of the budget base with the unit cost formula than did the state-level in California with the WTU formula. When an institution requested the full amount of the difference between direct salary costs for new programs and the estimated amount to be generated by credit hour production for the fiscal year, the Illinois Board staff allowed only one-half the difference--the other 50 percent had to come from a reallocation of resources within the institution. This tactic tended to shift uncertainty to the institutional level from the coordinating agency level, because the Board recommendations were not exceeded in the appropriations. That is, if appropriations had been less than the recommendations, cuts would most probably have been made first in the areas of new and expanded programs.

Since the abandonment of the formula procedures and with the trend toward leveling and declining enrollments, the Illinois Board of Higher Education has sought to maintain some slack for the funding of some new-program requests while at the same time reducing the growth rate of the institutional budget bases. A recent Board tactic has been to impose reallocation targets or base reduction targets on the institutions, depending upon the institutions' particular enrollment trends. Thus, the Board cut the institutional budget bases to provide itself with a pool of resources to allocate back to the institutions. These resources could cover, in part, the requests for new and expanded programs. Board flexibility was derived from its control over institutional resources. Rather than set internal reallocation targets for FY 1974-75, the Board imposed budget base reductions from two to four percent on four institutions experiencing serious enrollment declines and an across-the-board "productivity" cut of one percent for all institutions. Nonetheless, the Board's motive and tactic were similar to the prior year's reallocation targets.

The Texas budgetary formulas do not provide any money for new program start-up; rather, these costs must be absorbed by the institutions because the formulas are applied against historical and not projected student credit hour production data. Exceptions are made, however, for opening new institutions. Recently some of the new upper-division institutions have made good arguments for resources in excess of formula-generated amounts to offset start-up costs. Because the other institutions receive no compensation for new programs until they begin to produce student credit hours, the incentive for the institutions is to request consideration for a program as a "Special Item" or to request more resources than the formulas generate. Both tactics were tried with increasing frequency but with limited success, although the University of Texas at Austin was able to fund the LBJ School of Public Affairs as a Special Item.

Productivity Cuts: The Use of Historical Data Bases

Both the Illinois unit-cost formula (when it was still used) and the Texas formulas incorporated what might be termed productivity reductions into their computations, in that the formulas were either grounded on historical cost data or applied against historical enrollment or student credit hour production data. One reason given for the use of historical data bases is that institutions should be able to increase their operating efficiencies regularly and that one way to account for the greater efficiency (i.e., fewer resources to accomplish the same mission) is to use historical rather than projected data. The net result for the institution is a reduction in budget base and a loss of potential slack resources, whereas the net effect for the budget review or funding agency is a stretching of available resources.

The Illinois Board of Higher Education's staff reduced the institutions' potential slack by using credit-hour costs derived from cost studies which were two years old at the time of application. One reason, of course, was the fact that the previous year's cost study was unavailable during the budget preparation stage. Another reason followed from the relationship between average and marginal costs. Current marginal costs are less than current average costs. But current average costs are probably greater than the previous biennium's average costs. Therefore, current marginal costs were being approximated by the previous biennium's average costs. Moreover, the use of historical costs probably offered a reasonable approximation of reality, for the major cost factors (e.g., salaries, commodities, and services) were increased in the biennium subsequent to the cost study and thus compensated for a large part of the cost increases occurring after the cost study.

When Illinois' fiscal picture became bleaker in 1971, the Board expanded the productivity reduction strategy so as to make its own position less vulnerable vis-a-vis the Bureau of the Budget. The Board expected each institution to

estimate potential savings which would accrue from improved operating efficiency in FY 1971-72. For the most part, however, the institutions made no attempt to identify an estimated savings resulting from improved efficiency but instead expected the Board staff to make an overall determination to be applied to all institutions. By avoiding the difficult decision, the institutional level shifted responsibility for the designation of the "improved efficiency" cut back to the Board staff.

The Board staff derived some savings, which were justified on the basis of improved efficiency, by using average weighted costs from cost studies prior to the 1968-69 cost study, then the most recent study. The second tactic the Board staff employed to reduce institutional requests involved the comparison of the credit hour production per FTE faculty for 1967 and 1969. Between those years the production of credit hours declined at most institutions. This decline was attributed to a decrease in faculty productivity. Consequently, the Board staff "calculated a percentage decrease in credit hour production per FTE faculty between the 1967 and 1969 faculty load studies for each campus, applied one-half of this percentage to the institutional funding level reflected by the 1968-69 cost study for each campus, and reduced the FY 1972 instructional component by this amount."[7]

After use of the unit-cost formula was discontinued in Illinois, a productivity adjustment was still assessed (in FY 1974-75). The productivity cut (along with reallocation targets and budget base cutbacks) served several functions. First, the one percent budget base adjustment symbolized the Board of Higher Education's willingness to do its share to improve productivity and efficiency, topics of prime interest to the economy-minded governor. Secondly, the productivity cut was one of the few mechanisms which could be used by the Board to induce change at the institutional level. Finally, the cuts enabled the Board to avoid programmatic recommendations at the institutional level; the "lump sum"

nature of the reduction let the institution decide where the internal cuts would be made.

The application of the Texas formulas against historical student credit hour production and enrollment data deflated the budget base, as did the Illinois formula's historical cost data base. The driving force, however, behind the use of historical data was the legislators' distrust of institutional projections. As most institutional-level administrators in Texas are likely to complain, the data base is two years behind actual enrollments during the second year of the biennium. Naturally, such a lag can severely strain institutional resources during a period of growth and inflation.

To alleviate the fiscal pressures created by using the historical student credit hour production and enrollment data bases, the legislature appropriated a contingency fund for the "Faculty Salaries" area for use during the second year of some biennia. The fund was appropriated to the Texas Commission for Higher Education and, in subsequent years, to the Coordinating Board for distribution to the institutions according to the Faculty Salaries formula. If enrollment growth during the second year of the biennium exceeded the contingency funds available to cover the increase, the funds were allocated on a pro rata basis. For FY 1960-61 of the 1959-61 biennium, for example, the Texas Commission allocated a $737,987 appropriation for undergraduate enrollment increases; for FY 1962-63, the amount allocated from supplemental contingent appropriations was $1.5 million; for FY 1964-65, the amount was $3.98 million. For FY 1970-71, when the last contingency fund for enrollment growth was appropriated, the Coordinating Board allocated $8.2 million.[8] Pressures on the state treasury and the leveling trend in Texas enrollments have led to the curtailment of contingency funds for enrollment increases, although the legislature still appropriates contingency funds for special areas (e.g., the Coordinating Board allocated $1.5 million of a $1.9 million appropriation to finance increases

in nursing school enrollments for FY 1973-74 and a $3.2 million contingency fund for salary increases in FY 1973-74 for faculty members receiving less than $15,000 a year).[9] Although contingency funds were not appropriated regularly, as evidenced in the 1965-67 and 1967-69 biennia, the funds did reduce the fiscal pressures on the institutions and hence reduced some of the uncertainty over the source of resources for enrollment growth. Thus, institutions could plan on a certain level of support before the biennia began.

In contrast to the appropriation of contingency funds in Texas, no such funds were appropriated in Illinois. Institutions have requested such funds for internal control, but the Board of Higher Education has opposed that approach. Instead, institutions have been encouraged to create their own "contingency" funds by spending less than expected (i.e., less than appropriated).

Target Ceilings

The efforts aimed at limiting the size of formula-generated requests in California and Illinois through the imposition of target ceilings were unsuccessful for different reasons. Beginning in 1961 California's Department of Finance set rough ceilings on the state colleges' systemwide budget totals, but this action failed miserably because Finance unexplicably accepted Systemwide requests which exceeded the initial targets. This target-setting tactic was abandoned after three or four years.

The failure of target-setting in Illinois can be traced to a breakdown in communications between the Bureau of the Budget and the Board of Higher Education on the one hand and between the Board and the institutions on the other. Also, the formulas used were more generous than the Bureau of the Budget was willing to, or could, afford. In preparing the higher education budget requests for both FY 1970-71 and FY 1971-72, the Board did not pass down to the institutions the overall targets suggested by the Bureau of the Budget. Moreover,

the Board did not seriously review the ongoing programs in the institutions' budget bases and continued to use essentially the same formula procedures (with some minimum-impact productivity adjustments included in FY 1971-72) as in previous years despite the fact that the formula methodology had been criticized as allowing too much "fat." The net result of the breakdown in communications was that the Board of Higher Education lost much of its legitimacy as a coordinating agency together with the trust of the institutions and the Bureau of the Budget. Although the circumstances were different in California and Illinois, the lesson is similar: Target ceilings are incompatible with formula procedures unless the ceilings are incorporated into the formula mechanism or unless there is a significant reduction of the budget base.

Management Audits Strategy

California is the only case in which management audits were used to thwart institutional misuse of the formula procedures. Prior to the early 1960's, the Department of Finance maintained only loose control over the use of the WTU faculty staffing formula. The standard fiscal audits used with the S/F ratio methodology had been continued. Preaudits of the faculty staffing worksheets were conducted, but these were no more than routine checks for mathematical errors and misapplication of the formula. Following the failure of the target ceilings, Finance introduced in FY 1964-65 management audits, a decidedly more successful tactic. The audits increased the uncertainty in the application of the formula at the institutional level and enabled Finance to control better the formula-generated requests by policing the use of the formula. Finance's tactic was to use the formula structure as an audit track to focus on the utilization of instructional faculty (i.e., teaching) positions and to compare the audit results with the budgeted faculty positions and enrollments.

The first management audits were partially based on the strict inter-

pretation that funds appropriated for faculty positions should be expended according to the same staffing pattern used in generating the initial budget request. This standard was subsequently relaxed in deference to the vocal opposition raised by the Chancellor's Office and the colleges. They complained that the staffing formula had been intended as a resource acquisition device, not as an internal management tool. Thereafter, Finance concentrated on such areas as: 1) overstaffing in relation to actual enrollments; 2) the requesting of more positions than required for some disciplines, with subsequent absorption of the positions by other departments; 3) the use of faculty positions to teach classroom courses with enrollments less than the minimum required for financing courses under staffing standards; 4) the number of classes offered with enrollments of 10 or fewer students; and 5) abuses in crediting faculty members with workload credits for supervision.[10] Although the audits did tend to keep the institutions "off-balance" and make the campuses adhere to the formula guidelines, the audits were not as successful as they might have been because not all institutions were reviewed annually and because the results of audits seemed to have little impact on future budget outcomes.

The Texas Legislature has imposed several reporting requirements on the colleges and universities in the past but is only beginning to develop a special office with a management or program audit capability. Two required reports--a Teaching Load Report, which provides evidence of compliance with minimum standard teaching load requirements, and a Small Class Report, which catalogs all classes with less than the minimum number of registrations--appear to be intended as monitors of the use of formula-generated resources. Because the formulas having the largest impact, Faculty Salaries and Departmental Operating Expense, are based on student credit hour production, these reports serve as indicators of the amount and location of slack that must be absorbed to offer

small classes. There is no indication, however, that the reports have any significant impact upon the outcomes of subsequent budget processes.

Reducing Tolerances on Enrollment Projection Errors

Funding agencies in Illinois and California can control the magnitude of the institution's marginal resources (potential slack) by adjusting the official tolerances allowed on enrollment projections. At the same time, opportunities exist for institutions to maximize their marginal resources by taking full advantage of the tolerances without being penalized for undershooting or overshooting the marks.

Perhaps the most common tactic used to compensate for institutional overestimates or underestimates of enrollments or costs is an adjustment applied during the subsequent budgetary cycle. This tactic is especially useful for remedying increases caused by overoptimistic projections and for reducing the uncertainty for the coordinating agency or state level in the case of a difficult decision. In other words, it provides the opportunity for corrective action. In the 1967-69 biennium the Illinois Board of Higher Education adopted an enrollments policy which placed much of the responsibility for accurate enrollment projections on the institutions. The institutions benefited in the case of underenrollments; institutions had to lapse only those funds for actual enrollments which fell more than three percent below projected enrollments. Moreover, the lapsing of funds was not enforced until the second year of the biennium. To diminish any incentive for institutions to acquire resources through an uncontrolled growth in enrollments, the Board required that any institution enrolling students in excess of the budgeted number attempt to compensate internally by controlling the number of students accepted during the second year of the biennium. If excessive enrollment persisted at the end of the biennium, the Board staff refused to fund the overenrollments unless the institution could

adequately justify its situation. Institutions had to fund overenrollments out of their own slack resources.

Thus, any institutional tactic which justified additional resources on the grounds that the students were already on hand was effectively thwarted; indeed, the incentive for institutions favored the underenrollment of students. But during the growth era of the 1960's, it was difficult to deny access to students, and the Board staff was on reasonably safe grounds in providing the institutions a "cushion" in case of underenrollments only. (Northern Illinois, for example, requested nearly $1.0 million to overcome a deficiency due to overenrollment at the master's level. The Board staff recommended no compensation, noting that Northern had not taken strong enough action to compensate, during the second year of the biennium, for the overenrollments experienced during the first year.[11])

A revised Board policy for the projected 1969-71 biennium provided a three percent "cushion" in case of both underenrollments and overenrollments. Institutions which enrolled fewer students than projected and funded in 1967-69 had to reduce their budget base for overfunding greater than three percent. The change affected institutions which enrolled more students than projected or funded. These schools were permitted to receive additional funds in the subsequent biennium to cover up to three percent of the overenrollment.[12] The initial budget request instructions for FY 1972-73 identified a Board plan to limit the flexibility of the institutions by controlling some of the marginal resources. Twenty-five percent of the funds generated for FY 1972-73 enrollment increases were to be appropriated to the Board for subsequent distribution in spring 1973, when final enrollment figures were available from each institution.[13] The plan was not implemented by the state, however.

California has had an enrollment projection tolerance policy similar to that used in Illinois. For a number of years the flexibility factor was plus or

minus two percent. The policy stated that if the colleges' actual enrollments fell within plus or minus two percent of the budgeted (i.e., projected) enrollments, no adjustments in appropriated funds were required. If actual enrollments were more than two percent below the budgeted figures, the colleges had to return uncommitted funds to the state on some prorated basis. If actual enrollments exceeded the budgeted figures by more than two percent, the state was to make supplemental appropriations to the colleges.

This policy worked to the advantage of the state level during the enrollment growth period of the 1960's. Actual enrollments usually exceeded the budgeted amounts by more than two percent, yet the state had to provide supplemental funding for only that portion of the overenrollments in excess of the two percent leeway. In the California Legislative Analyst's Report for FY 1969-70, the Analyst's staff accused Systemwide of "cheating" on the calculation of overenrollments or underenrollments.[14] The tactic used by Systemwide in FY 1968-69, for example, to swing the trend of greater than two percent overages in its favor was to compute the "over two percent" figure on a campus by campus basis, rather than on a systemwide basis. Thus, Systemwide sought increased funding only for campuses with enrollments in excess of two percent over the budgeted figures. Some institutions had actual enrollments less than budgeted enrollments, but the former were within two percent of the latter. The computations done on a campus by campus basis produced a larger "students-in-excess-of-budget" figure than if the computations had been done on a systemwide basis (i.e., trading off deficit enrollments on some campuses for excess enrollment slots on other campuses).[15]

During the early 1970's, however, enrollments began to level in California; in some institutions, they began to decline. Under such conditions the two percent enrollment factor did not work in favor of the state level. In fact, the Department of Finance claims that between FY 1971-72 and FY 1973-74,

Systemwide enrolled a total of 24,000 FTE below the budgeted enrollments. To improve the state level's position on the issue of enrollment projection tolerances, Finance instituted a new policy in FY 1973-74. The tolerance in enrollment projections is now plus or minus 200 students for institutions with a student enrollment of greater than 10,000 FTE. The plus or minus two percent factor still applies to colleges with enrollments of less than 10,000 FTE. As a result, Finance has reduced its level of uncertainty by limiting the amount of tolerance in enrollment projections at the larger institutions whose enrollments have the largest impact in total dollar terms.

The Ultimate Counterstrategy: Introducing a New Formula

When all other counterstrategies fail to keep institutional growth within acceptable bounds, the coordinating agency or state-level agencies can abandon the existing formulas and adopt new procedures which employ parameters more favorable to the state's fiscal and political outlook. This counterstrategy has at least three possible options, each varying as to the degree of aggressiveness required for implementation: A short-term remedy is for the funding agency to ignore formula-generated totals or costly pieces of a formula package in making budgetary recommendations; another short-term strategy is to tinker with those provisions of the formula which are too expensive; and a third option is to abandon completely the existing formula and introduce a totally new procedure.

The Texas Legislative Budget Board and Executive Budget Office generally accept the formula framework recommended by the Coordinating Board, yet usually disagree with their formula rates. In this respect the state-level agencies maintain their options and flexibility while shifting uncertainty to the institutional level. The state-level agencies fit the total projected resources to the various formulas, rather than obligating themselves to finance formula-

generated totals. When a new formula is recommended by the Coordinating Board for a non-formula area, the state-level agencies retain the option to accept or reject the complete formula or only the rate structure, depending upon the cost of the new formula. If the formula is rejected, as was the "Instructional Administration" formula when first recommended for the 1973-75 biennium, the state agencies use the previous biennium's base to make recommendations for incremental changes. Thus, while the formula framework is not abandoned, the agencies which determine the final funding levels maintain considerable discretion in making their recommendations within this framework.

Several Texas institutions, including the University of Texas, have developed a strategy to compromise state-level recommendations. The strategy, a "totals-only" revised request, is generated in the spring while the legislature is in session after an assessment of the political and fiscal environment. The institution decides whether to focus on the House or Senate bills or take favorable items from each bill. The revised request is generally a compromise between the original institutional requests generated for the most part using formulas and with the option to request more than the formula totals on the one hand and the Legislative Budget Board and Executive Budget Office (governor's) recommendations on the other. Institutional priorities are established, and though these might not be presented in open hearings, they are communicated to the legislative and executive staffs. The revised request strategy was not used during the early and mid-1960's because the legislature was then appropriating resources at levels closer to the formula-generated amounts. The University of Texas has used the revised budget for approximately six years. This tactic is an effort on the part of the Regents to cooperate and work with the legislators and staff. The revised budget also represents an opportunity for the Regents to flex their political muscle.

The California Department of Finance adopted the second option in the formula change strategy--tinkering with high cost elements of the formula--in

reversing the graduate-level instruction differential policy. One of the unofficial rules of budget trimming might be stated as: When required to cut a budget, reduce the requester's known slack first. The reduction of known slack makes the cutter's task easier and less open to criticism. This tactic was copied by the Legislative Analyst's staff in 1970 in recommending budget reductions to meet the financial exigencies predicted for FY 1970-71.

The graduate-level instruction differential was a likely candidate for two reasons. First, the differential had not been protected by formal incorporation into the formula structure. The arrangement was the result of a policy agreement between Systemwide and the Department of Finance. The relatively short lifetime of the differential was undoubtedly one factor which explained why the formula enrichment had not been formalized; another was that the graduate differential had not been disaggregated as a separate K-factor. Secondly, the differential was regarded by Finance and the Legislative Analyst's staff as a very clear example of resources in excess of real need. Prior to 1967, the state colleges had always been able to finance graduate instruction out of the existing formula with the 12 WTU workload norm. In fact, it was the colleges' (and Systemwide's) inability to justify adequately the differential in 1970 which convinced the Legislative Analyst's staff, the legislature, and the Department of Finance that it was proper to eliminate the enrichment factor.

Tinkering with a formula is usually a short-term solution to the problem of "excessive" requests, for it tends to distort the original formula framework, unbalancing the pattern of incentives. Illinois and California relieved some of their fiscal problems in the early 1970's with major surgery: Illinois abandoned its unit-cost formula and procedures in FY 1972-73, and California replaced its WTU faculty staffing formula with the SCU/FTEF methodology.

The Illinois Board of Higher Education's decision to eliminate the unit-cost formula was forced upon it by the need to reduce the Board's uncertainty

created through continued use of the formula. Briefly stated, the state level complained that the formula was too rich and generated budget requests which the state could not afford. The Board was obligated to make institutional requests conform to the estimated available resources, a task which became more difficult as the difference between available resources and formula totals grew larger.

To pare down the total higher education budget base, the Board of Higher Education adopted a forced reallocation strategy whereby institutions had to identify their highest and lowest priority programs. This strategy to force reallocations on a statewide level was successful in that it reduced the overall budget request for FY 1972-73, yet was unsuccessful in that it left much of the responsibility for the final decisions to the Board staff. Although the initial listing of low and high priority programs and items was performed by the institutions, the Board staff members "absorbed the heat" when they selected among the high and low priority items on a statewide basis. The Board learned its lesson and dropped the policy of statewide reallocations in FY 1973-74.

In two recent budgetary cycles (FY 1973-74 and FY 1974-75) the Board of Higher Education has moved away from budgetary formulas and toward "indicators," less formally applied measures of system parameters, as the basis for budgetary decisions. In the 1974-75 budgetary cycle, for example, deficiency adjustments were recommended for certain universities to compensate for gross differences in funding levels, to promote specific educational objectives, and to reward past efficiency of operation. The comparison of several indicators of productivity--S/F ratios, faculty workloads, and costs per functional classification (costs per FTE student and costs per weighted FTE student)--revealed that Illinois State and Western Illinois and to a lesser extent, Northeastern Illinois, had heavy faculty credit-hour loads. The combination of low per-student costs and high faculty credit-hour output led to the recommendation that these institutions receive deficiency adjustments.

The shift to indicators gives the Board of Higher Education more flexibility in making recommendations than did the formula, but calls for more judgmental decisions by the Board staff. At the same time, uncertainty at the institutional level has increased considerably. One complaint echoed by numerous officials at the system and institutional levels is that during the last four years, the Board of Higher Education has started the budgetary process with a different approach each year. The use of budgetary formulas, it is noted, did routinize the process. Moreover, although the new methodology includes Resource Allocation and Management Procedures (RAMP)--a multiyear planning and budgeting system designed to function also as an information system--the new procedures provided the system and institutions with little guidance for developing reasonable estimates of total need. Consequently, most institutions and systems have reverted to the traditional incremental budgeting used prior to the advent of any budgetary formulas in Illinois. Going one step further, one system office--the Board of Governors' staff--has developed a formula on the basis of some cost and workload studies, in order to give the Board of Governors' institutions a handle on budget preparation. Without a statewide formula structure or explicit guidelines from the Board of Higher Education, most institutions are having to resort to "padding" as a tactic to insure their fair share of the higher education sector's resources.[16]

The rationale and fiscal predicament behind the abandonment of the WTU formula in favor of the SCU/FTEF methodology in California paralleled the conditions which led to the demise of the unit-cost formula in Illinois. At first glance the Department of Finance's rejection of the WTU faculty staffing formula, on the basis of the Teerink Report data, appears terribly illogical within the context of a single budgetary cycle (1971-72), but it was quite a logical strategy given the historical development of the WTU formula. Finance's dis-

approval of the WTU formula was illogical in the sense that the Teerink Report data misrepresented historical agreements between the colleges and Systemwide on the one hand, and Finance on the other. There had existed a long-standing agreement that supervision and independent study courses did constitute part of the 12 WTU faculty workload norm. (It must be noted that supervision and independent study were Teacher Education devices which burgeoned into other disciplines.) Yet in the long-range perspective, the rejection of the formula was designed to relieve the Department of Finance of the burden of financing the state colleges according to guidelines which generated a seemingly insatiable demand. A major reason for the sudden impact of the Teerink Report was that the report appeared during a lean revenue year. Nonetheless, the abandonment of the formula was the culmination of the various Finance strategies employed over the years to control the heavy fiscal pressures generated by the formula.

Finance sought to shift some of the uncertainty in the budgetary process back to the Systemwide and college levels. The overall strategy implicit in dropping the WTU formula was the movement toward control of the total resource pool available to the state colleges. What made the strategy all the more effective was the fact that the Department of Finance did not propose a detailed model for an alternative formula. Instead, Finance suggested that a new formula would have to be built around output measures of some kind. This strategy not only let the Department of Finance control the totals, as opposed to having the totals dictated by the WTU formula, but it also left the colleges and Systemwide uncertain as to how much to request. Thus, the onus was on the colleges and Systemwide to propose a new budgetary methodology acceptable to Finance.

The Department of Finance might have jockeyed with the WTU formula elements such as class sizes and breaking points to arrive at a modified formula which would have generated a more modest budget request. There are several

reasons why such alterations would have been unsuited to Finance's objective of reducing its uncertainty. If Finance had merely adjusted the WTU formula, it would have been an acknowledgement that the basic formula structure was satisfactory. Finance did not want to admit this because it was not the case. Furthermore, in a very operational vein, such changes would have taken too long to effect. That is, a formula-modification strategy would have involved tinkering with the entire formula. Because the formula was so complex, it would have been extremely time consuming to fix the formula elements within a dollar total. Finally, Finance was particularly interested in focusing on some specific areas, the so-called "policy curtailments." Finance felt that it was on firmer ground by attacking the policy areas directly, rather than to have its criticisms muted by a complete restructuring of the formula base.

In a tactic apparently adopted to keep Systemwide and the colleges off balance, Finance employed a different review procedure for the 1974-75 budget request than it had used in previous years. In the past Finance had focused on proposed augmentations to the budget base. Finance had to look at the budget in isolation from ongoing programs and was, therefore, relatively uninformed as to the adequacy of base activities. Also, Finance had neither the time nor the manpower needed to examine the budget base. And just as importantly, base programs tend to have constituencies and hence defenders, making it difficult to reduce or eliminate programs.

For the review of the FY 1974-75 budget requests from all state agencies, the Department of Finance adopted the strategy: "There is no such thing as a budget base." Thus, nothing was to be considered sacred in any agency request. This strategy also suggested to state agencies that in the future there might be elements in the base which could be eliminated. To give the warning some authority, Finance examined closely certain items in the Systemwide budget base (e.g., communications) to criticize and reduce.

A companion tactic used by Finance for the FY 1974-75 budget review was to lump all "Program Maintenance Proposals" (PMPs) and "Program Change Proposals" (PCPs) together into one category--"Budget Change Proposals." PMPs were supposed to include workload-related adjustments and special cost increases. PCPs were intended to cover adjustments resulting from enrichment and increased levels of service. Agencies had found that it was to their tactical advantage to lump most increases and adjustments into PMPs, which were less susceptible to cuts than PCPs. To discourage this maneuvering, the Department of Finance eliminated the distinction between PMPs and PCPs.

A third tactic designed to insure Department of Finance control over the SCU/FTEF methodology was the continued use of the 12 WTU faculty workload norm. Some observers at the state level have noted that there had been no audits on the instructional portion of the budget since the SCU/FTEF methodology was first implemented and that Systemwide still retained the WTU workload norm. The Reagan Administration placed a high stock in workload measurement; thus, it would have been politically infeasible for Systemwide to drop this type of measure. Whether or not Finance actually enforced the WTU norm, the agencies felt compelled to do so. The norm's very existence meant that the institution was constrained internally by the old WTU structure of modes of instruction and maximum class sizes and from above by a campuswide SCU/FTEF ratio.

Similarly, the State of Texas is seeking to reorganize completely its budgetary process according to the tenets of zero-base budgeting. The initiative for this approach is coming from the governor's office, but the operationalization for the 1975-77 biennium involves a joint effort with the Executive Budget Office and the Legislative Budget Board staffs. Unlike the changes in formula procedures in Illinois and California, which affected only the higher education sector, zero-base budgeting in Texas is aimed at all state agencies. The Legislative Budget Board and Executive Budget Office staffs are having difficulty applying zero-

base budgeting to higher education, however. Zero-base budgeting will not override the present formulas, for example, because as an observer in the Budget Office noted: "The formulas are too desirable." Generally, zero-base budgeting will apply to the nonformula areas of the operating budget; the present formula framework is essentially a zero-base process in that the budget is reconstructed from the ground up every biennium.

One indication of the difficulties which arise in adapting zero-base budgeting to fit higher education was the use in Texas of two sets of budget instructions for 1975-77: one, the traditional formula-based instructions, and the second the zero-base format. The latter instructions required that the institutions present contingency plans for levels of funding below the formula-generated amounts (e.g., if your institution receives 85 percent of a given formula, what programs in that formula area would you keep?). There is clearly little incentive at the institutional or state levels to adopt zero-base budgeting for higher education. At least one institutional budget officer is recommending that the institutional requests be calculated as before, with these requests refined and "backed into" the zero-base format. At the state level, too, there is considerable uncertainty over what to do with the zero-base format priority rankings. A dilemma exists because there appears to be no way to treat the different priorities within the formula structure, whereby all institutions receive the same percentage of formula.

Institutional-Level--School-Level Interactions

Evidence of strategies and counterstrategies associated with the intra-institutional application of formulas to the budgetary process is limited primarily to the California case. Illinois does not currently use a statewide formula in the instructional area, although both Northern Illinois University and the University of Illinois do employ "indicators" for internal allocation. However,

Northern's weighted productivity ratio approach is essentially the same as the California State University and Colleges' SCU/FTEF methodology. Furthermore, there is evidence of uncertainty shifting at Northern in that productivity targets set by the provost's office are passed down to the department level. In Texas formula usage appears to go no lower in the authority hierarchy than the institutional level. There are exceptions: some extremely aggressive departments at the University of Texas at Austin and Southwest Texas State University use the state formulas as justification for their fair share of the institutional appropriations. Both institutions maintain small contingency funds by withholding, during the internal allocation process, a portion of the formula-generated total appropriated to the institution. Yet the instances of statewide formulas having a direct impact within the institutions are far fewer than in California, where the formulas impinge more clearly at sub-institutional levels.

Even in California strategies and counterstrategies occur less frequently between schools or administrative levels within the institution than is true between the state and Systemwide/institutional levels. These intrainstitutional strategies are more subtle and difficult to detect because of the less structured relationships at that level. A primary concern of administrators at the institutional and school levels is, of course, uncertainty reduction, particularly through the manipulation of slack, but there is decidedly less evidence of intra-institutional uncertainty shifting; perhaps the "organizational distance" between institutional and school-level administrators is considerably less than that between the state and institutional levels. In fact, it is difficult to distinguish between institutional-level and school-level slack-manipulation strategies because institutional strategies directed toward higher-levels are frequently nothing more than consolidations of individual school strategies and tactics. In the following discussion, attention is focused upon the California State University and College institutions.

Techniques for Gaining Slack: Strategies and Counterstrategies

Skimming. Skimming is the practice of taking a contingency reserve off the top of a resource pool before allocating the resources to lower levels. These lower levels might also take a small reserve off the top of their shares before distributing the funds to even lower levels, and so on. These reserves are held to meet any contingencies which might arise at subordinate levels; in this sense the reserves are hedges against uncertainty. Skimming, or the creation of contingency reserves, is not peculiar to systems which use formula budgeting, but it is interesting to observe that in the allocation process in such systems, resources are not always distributed to budgetary units in the same proportion as requested through application of the formula.

Under the California WTU faculty staffing formula, the dean of academic planning at Hayward created a reserve of from five to 15 percent of the total faculty staffing budget. This pool of approximately 75 faculty positions was not all surplus because some of the positions had to be used to cover certain "fixed" programs mandated by the state which were not covered by the formula. Nonetheless, the reserve furnished the dean flexibility to meet emergencies such as unexpected increases in enrollments at registration time and to satisfy the forced salary savings requirements imposed by the Department of Finance. At the beginning of FY 1973-74 however, when Hayward was plagued with declining enrollments and was working with a new SCU/FTEF procedure, the dean of academic planning had only 7/10 of a position (versus perhaps five to 10 truly free positions under the WTU formula) at his discretion. With a total faculty of between 600-700 members, this was not very much slack.

There is some uncertainty-shifting gamesmanship with respect to reserves that goes on between the dean of academic planning (Hayward) and the vice president for academic affairs (San Jose) and the school deans. The academic

planner and academic affairs vice president expect the deans to hold reserves so that they will not come to them for extra positions. In most cases the deans attempt to hold some discretionary positions, thus absorbing some of the uncertainty that would otherwise fall on the higher level. At least one dean interviewed, however, makes it a policy not to hold any discretionary positions. His strategy is to shift responsibility for meeting contingencies to the academic planner/academic affairs vice presidential level. During previous growth years, the higher level has often supplied the extra positions. But as the fiscal picture becomes bleaker, the institutional level must often go to Systemwide to get extra positions--with a decreasing chance of success. Although the dean temporarily shifts the uncertainty back to the institution's top administrative level, he may be the loser if the extra positions are not available. Of course, this strategy is unwise if the dean has more faculty positions than he requires, because his slack will be reduced when it is discovered.

Assigned Time. Assigned time is credit in the form of weighted teaching units (WTU) given to faculty for assuming extra duties such as handling excess enrollments, preparing courses never before taught by that particular faculty member, providing special graduate student testing services, participating in team teaching efforts, and the like, all of which would be above and beyond the 12 WTU workload norm without specific compensation. The assigned time compensation is probably the most important source of intrainstitutional flexibility provided within the formula framework. At both Hayward and San Jose assigned time has been used more in the last three years than ever before, primarily because there was sufficient slack in the old WTU formula system without resorting to the use of assigned time. Assigned time is regulated by Systemwide. For FY 1973-74, each campus was not to have more than 10 percent of the faculty (with a maximum of three WTU per faculty member) in the assigned time category. On several campuses the assigned time classification has been used as a source of slack.

By allowing up to 10 percent of the faculty no more than three WTU credit for assigned time, an institution can build into its teaching effort slack equal to 2.5 percent of its total instructional budget. Some time is used for unapproved or borderline activities, and while these uses would be included in the potential 2.5 percent pool of slack, they are activities which could not otherwise be supported. In this latter sense, the borderline activities must be considered another dimension of slack.

One borderline use of assigned time favored by department chairmen and school deans is for release time. Promising faculty members are allowed lighter instructional workloads under the guise of assigned time in order to provide additional time to pursue their research. Some campuses can enlarge their budgets by purposely running up the size of some of their classes in order to become eligible for more assigned time. Systemwide is particularly concerned that some institutions may be splicing assigned time with administrative time for department chairmen. This action is clearly contrary to Systemwide policy, because faculty positions cannot be used for administrative work. Nonetheless, the assigned time category offers school deans and even institutional-level administrators a powerful incentive to develop sources of slack.

Temporary Faculty Positions. The use of both part-time and full-time temporary faculty positions is an important source of flexibility and slack for school deans, so much so that Systemwide requires the institutions to have a minimum of 10 percent of the total faculty FTE positions in the temporary category. (In Illinois, Northern's greatest source of flexibility is in its temporary faculty positions. In general, the use of temporary positions is a significant source of flexibility in any state.) School deans and institutional-level administrators in California use temporary positions as slack in two ways. First, temporary faculty are used to absorb enrollment declines and shifts in student demand within the institution. As enrollments decline, programs losing students

can reduce their temporary faculty first, protecting the tenured or permanent faculty. As students shift from low-cost programs in the social sciences to higher-costs programs in professional areas, temporary faculty can be hired to satisfy the need for additional faculty in the high-demand areas. By maintaining these additional positions on a temporary basis, the institution retains its flexibility in case student demands suddenly change again.

The second way in which temporary positions are used as sources of slack arises from the higher WTU workload norm expected of temporary faculty. Permanent faculty are expected to carry a 12 WTU instructional workload plus a three WTU workload consisting of committee work, student advising, and community service. Temporary faculty do not get involved in committee work and student advising and are therefore employed on the basis of a 15 WTU instructional workload. Technically, the non-instructional workload generated by the temporary positions, but not assumed by these positions, must be borne by the permanent staff. Assigned time and "reassigned time" are used in part to reward permanent faculty for carrying this extra load.

The source of slack is the three WTU instructional workload differential supported by the temporary positions. Both the SCU/FTEF and the WTU faculty staffing formulas assume an FTE faculty position to be 12 WTU. When permanent faculty positions are converted to temporary faculty positions, the conversion is done on the basis of 15 WTU. For every permanent position so converted, the department and school picks up the equivalent of 1/4 of a position. These extra fractions of positions are used in turn to reduce the instructional workload of permanent faculty--they become, like assigned time, a source of released time.

CONSEQUENCES OF INTRAINSTITUTIONAL FORMULA BUDGETING UNDER THE CALIFORNIA SCU/FTEF METHODOLOGY: THE INCENTIVE STRUCTURE

Under the SCU/FTEF formula methodology there is considerable incentive to increase the number of FTE students. Departments, schools, and institutions now pack their classes, servicing more FTE students, in the hope of getting a larger operating budget next year because of the increased clientele base. However, all that the departments and institutions will get as reward next year is a higher SCU/FTEF ratio because this year's ratio will work against them in the historical three-year average. One state level observer admitted that "the campus is cutting its throat if it increases productivity." This is one reason why the SCU/FTEF ratio procedure might be an interim measure. If a department or institution should decrease the number of students served, the reduction will indicate to Systemwide and the state level that fewer faculty will be required next year. One observer described the institution's plight as: "Damned if you do, and damned if you don't."

It pays to pack students into classes for another reason. Departments and institutions want very much to avoid the payback of appropriated funds because of underenrollments. Paybacks are always difficult to reclaim because the resources have already been committed to faculty positions and instructional services even before the fiscal year begins. Thus, the departments and institutions are caught both ways by the SCU/FTEF system.

Another consequence of the SCU/FTEF ratio methodology is that the level of interdepartmental competition for scarce resources has increased. Under the WTU staffing formula, there was little conflict between low-cost and high-cost programs because there was not a fixed allotment of dollars. Each program "earned" its own way based upon the number of students it could attract. With the SCU/FTEF ratio, however, new programs have to be funded from existing ones. In addition, the shifts in student demand are forcing some traditionally

strong liberal arts programs to suffer at the expense of both expanding professional and career oriented programs and other liberal arts and sciences programs (e.g., biology). It is more difficult for the programs suffering declining enrollments to add courses or even to maintain a complete curriculum because the SCU/FTEF ratio is more sensitive to changes in demand than was the WTU formula. (The WTU formula required that a department have sufficient students to exceed the breaking point in order to justify a new section and an additional faculty position.)

The best example of the consequences of intrainstitutional budgetary strategies is the Hayward campus' use of the Maximum Intrinsic Ratio (MIR). There is a tendency for department chairmen deliberately to under-schedule their programs in order to drive up the maximum intrinsic ratio and thereby attempt to gain staff in subsequent years. Unfortunately, departmental growth is thwarted rather than benefited if the departments underschedule. With under-scheduling, there is an inability to generate the FTE student totals which are used to conjunction with the MIR analysis to derive faculty needs for subsequent years. The departments are thwarting their own efforts to gain staff rather than enhancing them by putting artificial ceilings on their FTE totals. Percent attainment of MIR has an impact on faculty cutbacks within a fiscal year but not between fiscal years. Unfortunately, department chairmen are confusing the incentive structure of the internal allocation procedure (MIR) with the external acquisition procedure (SCU/FTEF) and thus are planning their growth strategies around the wrong set of incentives.

TRUST AS A SURROGATE CONTROL IN STATE-LEVEL AND COORDINATING AGENCY INTERACTIONS

In California, Illinois, and Texas the state levels have at one time or another used established bonds of trust with intermediate agencies as a substitute for direct procedural control over, or monitoring of, institutional activities.

Consider, for instance, the California experience. The technical details of the weighted teaching unit (WTU) faculty staffing formula determined the boundaries of the negotiated environment for the Departments of Finance and Education and the colleges. That is, the formula provides limits for funding for given conditions at the institutions. Finance's initial bargaining position--that the formula should not generate institutional needs that greatly exceeded the requests generated by the student-faculty (S/F) technique and that Finance should have final program and course approval--was designed to maximize Finance's control over the new process and to minimize the potentially negative (to Finance) effects of control in the hands of other organizations. The fact that Finance acceded to the Department of Education demands for program and course approval was not necessarily an indication that Finance accepted a greater burden of the uncertainty in the budgetary process. The relationship of trust and confidence that had formed between Finance and the Department of Education during the formula negotiations was significant in this respect. The trust relationship--that is, Finance's confidence that the staff in Education carefully monitored new-program approvals--became a substitute for actual Department of Finance control of program and course approval.

At the same time Finance was able to shift some of the uncertainty it had previously borne to the Department of Education. Prior to adoption of the staffing formula, Finance generally dealt with the colleges separately even though budget requests were forwarded through Education. Education's assumption of responsibility for program and course approval along with the traditional responsibility for budget review permitted Finance to use Education more as a buffer between Finance and the colleges in budgetary matters.

Both the Illinois Board of Higher Education and the Texas Commission on Higher Education (later the Coordinating Board) were created to reduce the increasing political uncertainty associated with dealing directly with the ever-

growing number and complexity of institutions. The legislators trusted the coordinating boards to regulate the higher education systems. The Illinois Budgetary Commission's and legislature's trust in the Board of Higher Education were reflected in the legislature's appropriating almost to the dollar the Board's recommended levels between 1962 and 1969. The Texas Legislative Budget Board and Executive Budget Office trust in the Coordinating Board is manifest in the remarkably close personal and working relationships between staff members in all three agencies. Moreover, both the Legislative Budget Board and the Executive Budget Office usually accept the formula framework, if not the specific formula rates, proposed by the Coordinating Board.

Although the coordinating agencies (or in the case of the California State Colleges, the Department of Education or the system-level office) reduce state-level uncertainty by assuming responsibility for the implementation of resource allocation decisions, a trust relationship is a two-way arrangement which also offers the coordinating agency level support in its dealings with the subordinate units. When the coordinating level's budgetary recommendations are accepted by the state, the coordinating agency can use this trust as a power base, or bargaining lever, and as a source of operational flexibility in working with lower levels in the authority hierarchy.

Because a relationship of trust affords potential for a positive-sum reduction of uncertainty accompanied by uncertainty shifting, this trust is actively cultivated by the coordinating agency level. One general technique is, of course, to publicize the cutting of institutional budget requests, for cutting connotes fiscal responsibility in the eyes of most state-level officials.[17] A more subtle strategy evidenced by coordinating agencies is "asking for what sells"--in other words, gauging the fiscal and political environment and requesting only the resources that the state appears willing or able to provide. Such requests also play upon specific state-level sensitivities. The Illinois Board of Higher

Education, for example, used to segregate the salary-increases portion of the budget request into two categories: a step increase for all employees and a merit increase. The merit increases were separated to highlight the fact that salary increases were based, in part, on productivity increases, which were a particular concern of the legislature. More recently, the Board staff recommended that funds provided for academic salary increases for FY 1972-73 be awarded entirely on the basis of merit. This was to become the philosophy for requesting salary increases in subsequent years.

Much of the "politics" of formula budgeting in Texas is centered around the maintenance of a strong trust relationship between the coordinating board and the state level. Much of the trust evolves from the particularly close working relationships. The Coordinating Board shares information with both state-level agencies and does much research for the Legislative Budget Board, especially in the area of new and non-formula items. Moreover, the biennial construction of the budgetary formulas is monitored by the Legislative Budget Board and the Executive Budget Office; both agencies are allowed input into the process and are invited to Formula Advisory Board meetings.

Another important aspect of trust maintenance in Texas appears in Coordinating Board formula recommendations which are designed to generate requests for no more than what the state is likely to fund. This sales strategy is best illustrated by the biennial interplay between the various formula study committees, the Formula Advisory Committee, the Coordinating Board staff, and the Coordinating Board itself. The Coordinating Board had been very reluctant to push for substantial increases in the faculty salaries area (until the preparation of the 1975-77 guidelines). The Faculty Salaries Formula Study Committee recommended, after a thorough review, a salary rate structure for FY 1971-72 which was 8 percent higher than in the previous year. The study committee also recommended that the formula rates for FY 1972-73 be set at 105 percent of the

recommended rates for FY 1971-72. This 1971-73 biennium rate structure was approved by the Formula Advisory Committee, but the Coordinating Board argued that the salary rate increase was too much to request from the state and recalculated the rates to provide an overall average improvement in rates of 4 percent for each year of the 1971-73 biennium.

The most significant element of the Coordinating Board's formula decisions is the base for recommended increases--should the Board use the recommended rates or appropriated rates for the second year of the previous biennium as the base? In its faculty salaries recommendations for 1973-75, the Board reaffirmed its recommendations for 1971-73 by requesting a 3.5 percent improvement factor increase for FY 1973-74 in addition to an annual 3.5 percent inflation factor increase for both FY 1973-74 and FY 1974-75. The Faculty Salaries Formula Study Committee which reviewed rates for 1975-77 used the 1974-75 appropriated rates as the base and recommended an increase of 7 percent for each year of the 1975-77 biennium. The Board claimed that this increase was too low, however, and recommended that faculty salaries be escalated at an 8 percent per annum rate.[18] Similarly, the Departmental Operating Expense Formula Study Committee which reviewed rates for 1975-77 held to the 1974-75 appropriated rates as base because these rates were 96 percent of the requested rates and appeared to provide a more realistic standard by which to estimate increases. Again, the study committee was overruled and the Departmental Operating Expense formula went forward from the Board with rates based upon the recommended rates of the previous biennium. In summary, the formula study committees appear to develop the initial recommendations in light of indicators and other signals from the state level.

Once the coordinating agency level has made its recommendations, it tends to engender trust at the state level by standing behind its recommendations in the face of institutional "end runs" in search of additional resources--the

coordinating agencies in Illinois and Texas and the systemwide office of the California State University and Colleges adopt this stance to maintain their legitimacy in the eyes of the state. A good example of a firm stand appeared in Texas, where the Coordinating Board recommends budgetary formulas but has no formal review authority. In September 1970, the chairman of the Coordinating Board told members of the Legislative Budget Board that public senior colleges and universities had requested more than $42.8 million over the amounts which were generated by using the formulas recommended by the Board and that the Board "'is in complete accord with the desire to reduce requested appropriations in order to finance only the most essential activities.'"[19]

THE COORDINATING AGENCY BUFFER FUNCTION IN STATE-LEVEL--INSTITUTIONAL INTERACTIONS

In addition to employing strategies and counterstrategies fashioned, for the most part, around formula structure, institutions and coordinating agencies also take advantage of their relative positions in the authority hierarchy to reduce their uncertainty. In particular, just as state-level agencies use the coordinating agency or system levels to act as a buffer between the state level and the institutional level, so too can the process be reversed as the intermediate level buffers the institutions against the state level. The larger institutions in such states as California, Illinois, and Texas have always managed to wield considerable influence at the state level and have found the introduction of an intermediate layer--especially a coordinating agency--to be more of a hindrance than a help as a buffer. Naturally, smaller institutions have viewed the intermediate level as a means to rectify the power imbalance between the "haves" and the "have nots" through careful attention to the equitable distribution of resources within the higher education system. However, during the 1950's, the California Department of Education did not control the institutional level as

tightly as its counterparts in Illinois and Texas but served as an effective buffer for the state colleges.

The Department of Education's demand for authority over program and course approval during the early 1950's was not so much a direct counter-strategy to Finance's claim to the same responsibilities as it was an indirect institutional strategy to use Education as a buffer between the colleges and Finance. The colleges were reasonably certain that their new and expanded programs would receive a more sympathetic review from the Department of Education than from Finance, if for no other reason than Education's greater professional "expertise" in the area. It appears that the colleges played upon the professional concerns of the educators in the Department of Education and in a sense coerced Education to assume review responsibilities which it never really desired and for which it was not really equipped. Thus, the colleges increased the certainty of the budgetary process by falling more directly under purview of an agency whose behavior was more predictable in program review than was Finance's. Although Education became a "planned" buffer for both Finance and the colleges, most Finance and institutional strategies and counterstrategies employed through the late 1960's continued to be directed at one another.

This use of the Department of Education by Finance and the colleges is an example of a positive-sum reduction of uncertainty accompanied by uncertainty shifting. Finance reduced its uncertainty by structuring its institutional relationships more clearly through Education. The colleges increased the predictability of their immediate environment by falling under Education's responsibility in the program review area. Finally, Education reduced the uncertainty in its immediate environment by assuming control of the program and course review functions. At the same time, Finance avoided the administrative responsibility for review (by agreeing to assign Education these duties), shifting this uncertainty to Education while still maintaining indirect control through the trust and confidence relationship.

Although the creation of most coordinating agencies is justified partially on the basis of the buffering function these agencies perform, the coordinating agency staff does not usually seek to increase the uncertainty it must face. There are indications, for example, that the Illinois Board of Higher Education under the Browne and Glenny regimes (1962-68) sought at times to minimize the impact of an institutional buffering role the Board played vis-a-vis the state level. While the Board established the budget request ceilings for each institution, the institutions were permitted to make their own presentations to the legislature--under the watchful eye of the Board staff which monitored the presentations to insure institutional compliance with Board guidelines. Although the Board set the request ceilings and held the institutions to them, the Board shifted some uncertainty to the institutional level in the sense that the institution succeeded or failed in justifying its own request. For the most part, the institutions were successful in defending their requests, yet the University of Illinois, for instance, "voluntarily" took a reduction in appropriations below the level recommended by the Board during hearings for the 1967-69 budget.

FOOTNOTES

Chapter 5

[1] The distinction between extension work and off-campus resident credit is currently made by the institution. Some institutions have retained the extension classification--although the incentive for additional resources may push institutions toward off-campus resident instruction, there may be pressures (i.e., prestige, an existing audience) to continue extension work. The Coordinating Board is just beginning to study the situation.

[2] State of Illinois, Board of Higher Education, Report No. 32 of the Executive Director, December 22, 1964, pp. 126, 132, 139, 143, 147, 151, 155.

[3] Ibid., pp. 140-141.

[4] Ibid., p. 121.

[5] Wildavsky, A. The Politics of the Budgetary Process. Boston: Little, Brown, 1964, pp. 108-123.

[6] State of Illinois, Board of Higher Education, Report No. 30 of the Executive Director, October 27, 1964, p. 103.

[7] State of Illinois, Board of Higher Education, Executive Director's Report #93, January 5, 1971 (Revised February 3, 1971), p. 18.

[8] State of Texas, Texas Commission on Higher Education, Report to The Honorable Price Daniel, Governor of Texas, and The Legislature of the State of Texas, December 31, 1962, p. 51; Texas Commission on Higher Education, Annual Report of the Texas Commission on Higher Education to The Honorable John Connally, Governor of Texas, and The Legislature of the State of Texas, December 1, 1964, p. 5; State of Texas, Legislative Budget Estimates for the Fiscal Years Ending August 31, 1973 and 1974. (Submitted to the Sixty-Third Texas Legislature by the Legislative Budget Board, January, 1973, p. IV-11.)

[9] CB Report, 9, No. 3 (March 1974), p. 2; CB Report, 9, No. 6 (June 1974), p. 2.

[10] California Department of Finance Audits Division Report No. SSC-140. TO: Dr. Glenn S. Dumke, Chancellor; FROM: Trustees of the California State Colleges; SUBJECT: Management Audit of Teaching Positions, Sacramento State College, Fall 1970 Semester; dated January 20, 1971, p. 1.

[11] State of Illinois, Board of Higher Education, Executive Director's Report #52, January 11, 1967, pp. 351-361.

[12] State of Illinois, Board of Higher Education, Executive Director's Report #71, December 2, 1968, p. 619.

[13] State of Illinois, Board of Higher Education, Instructions for Submitting 1972-73 Operating Appropriations Requests, June 25, 1971, p. 9.

[14] California Legislative Analyst's Report for FY 1969-70, pp. 416-417.

[15] Ibid., p. 416.

[16] One observer at the system level noted, "If we come in with a realistic request, the Board of Higher Education will cut us. We don't want to pad our budget, but to stay competitive with other systems we have to ask for a little more, even if it is a little ridiculous."

[17] See Thomas J. Anton, "Roles and Symbols in the Determination of State Expenditures," Midwest Journal of Political Science, 11, No. 1 (February 1967), pp. 27-43, for a discussion of the symbolic aspects of budgetary behavior.

[18] CB Report, 9, No. 1-2 (January-February 1974), p. 2. More recently, the Coordinating Board endorsed requests for appropriations which included an across-the-board salary increase of 13.6 percent for FY 1975-76 and 10.2 percent for FY 1976-77. See CB Report, 9, No. 8 (August 1974), p. 4.

[19] CB Report, 5, No. 9 (September 1970), p. 1.

6.

The Relationship Between the System of Roles, Formula Structure, and Formula Budgeting Behavior: A Comparative Analysis

The strategies employed by the state, coordinating agency, and institutional levels to achieve a reduction in uncertainty followed two patterns: the shifting of uncertainty to other levels and the cumulation of excess resources in anticipation of future contingencies, expansion, and enrichment. Likewise, the consequences of one level's strategies for other levels essentially paralleled the strategies: the locus of budgetary control was shifted and the balance of slack resources at each level was upset.

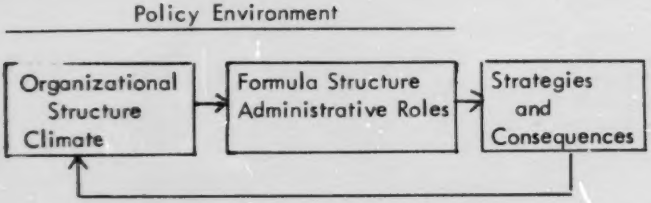
That is, the state level's first priority was to place a ceiling on budget requests, and if that objective proved impractical, the second priority was to employ a budgetary decision rule which could at least predict budget totals. Budgetary formulas were introduced in part to perform one or both of these functions. Generally, the state level wanted to control or at least predict agency spending patterns to preclude a state budget deficit; if budget surpluses accrued from careful management, they could be used to compensate for unanticipated agency expenditures. When formulas were misused, or the incentive structure unexpectedly worked in the institutions' favor, the state level countered with a variety of

measures including external controls, formula modifications, or even the abandonment of formulas in order to contain institutional requests and reduce uncertainty at the state level. The state level sought to control higher education spending through state-level agencies (executive budget staff and legislative fiscal staff) or an intermediary (coordinating agency). When the state or coordinating agency level could not effectively restrain institutional requests, control of the budgetary process shifted to the institutional level.

The most universal institutional (or any spending agency) strategy was to ask for as much money as the market would bear. This strategy placed responsibility on the state level for providing the resources or for deciding the level of funding if different from the request. Budgetary formulas provided a "guaranteed" minimum funding level, whereupon institutions tended to seek resources beyond this minimum. Within the formulas framework, institutions quickly grasped the essentials of the incentive structure to maximize appropriations. Moreover, institutions also pursued slack-generating and growth strategies outside of the formula bounds. As the state and coordinating agency levels imposed tighter controls to curb these institutional strategies, institutional slack and growth were limited.

This behavior can be better understood by removing the strategies and their effects from the empirical context and placing them within an analytic framework (see Chapter 2) comprised on the one hand of a system of roles, enabling one to investigate the impact of the larger social, economic, and political environment on formula budgeting behavior, and on the other hand of formula structure, providing the technical bounds within which the strategies are employed. These two aspects of the framework incorporate what might be termed the policy environment of the budgetary process for higher education. This environment, together with assumptions of organizational behavior in general (for example, the need to reduce uncertainty and the reduction of risks

through incremental action), explain most of the similarities and differences in formula application strategies and consequences.[1] The major causal threads in the chain of independent and dependent variables are summarized as follows:



THE SYSTEM OF ADMINISTRATIVE ROLES

The Roles

Administrative role was characterized previously as a set of prescriptions defining what is or should be the behavior of an actor attached to an organizational position. Furthermore, an actor's role is determined by the focal actor's position with respect to other actors, expectations about behavior, and the sanctions associated with a particular activity or behavior.[2] The role system of state budgeting for higher education consists of actors at three levels: state, coordinating agency, and institutional; each level has a formal position in the status hierarchy and is expected to perform certain functions. The pattern of interrelationships is governed largely by these sets of mutual expectations. An equilibrium condition exists when there is general agreement on the sets of expectations. Interorganizational relationships are upset and conditions of disequilibrium ensue when there is considerable disagreement over expectations of

the functions to be performed and the manner in which they are to be performed. The stability of the role system depends to a large extent upon the reciprocal relationships which become manifest as the various actors proceed to reduce uncertainty arising from the external environment and from within the system, as evidenced by the gamut of budgetary strategies and counter-strategies employed by the actors in the process.

The first element of the role system which should be considered is the relative positioning of the three levels in the status hierarchy. Naturally, the state level is at the top of the hierarchy with authority vested in the government by the citizenry. In very practical terms, state-level authority lies in the collection and disbursement of state revenues and in the expression of the public's "consumer" preferences. Although the control of state resources is usually shared in varying degrees by the legislative and executive branches, the state level will be represented for the purposes of this analysis by what is judged to be the dominant state-level agency in budgetary matters; these agencies are the Department of Finance in California, the Legislative Budgetary Commission and later the Bureau of the Budget in Illinois, and the Legislative Budget Board in Texas. At the other end of the hierarchy stands the institutional level, which bases its authority on its specialized competence to provide instructional, research, and public services. The institutions are very much dependent on the state funding agencies for the resources to continue these services; the state-level agencies, on the other hand, depend on the experts grouped in institutions to offer the services designed to improve the general public welfare.

Occupying an intermediate position between the state and institutional levels is the coordinating agency level--the Department of Education and later the Coordinating Council for Higher Education in California, the Board of Higher Education in Illinois, and the Texas Commission on Higher Education and later the Coordinating Board in Texas. In all cases except California's Coordinating

Council, the coordinating agency buffers the other two levels from each other by acting as an intermediary between the two.[3] Specifically, the coordinating levels "may absorb demands from the higher status role thrust upon the lower status roles in such a way that [the two roles] experience an exchange which is apparently balanced."[4]

The authority of the coordinating agency level is derived from a variety of sources: statutory authority to perform such tasks as budget review, program evaluation, and planning; the professional expertise to perform these functions; and the legitimacy of the coordinating agency's activities as bestowed by the institutional and state levels.[5] With respect to formal or legal authority, the California Board of Education and the Coordinating Council had weak powers to make budgetary recommendations and to conduct program reviews. In contrast, the Illinois Board of Higher Education has enjoyed considerable power in the areas of budget review, program review, and master planning just as Texas' Coordinating Board (previously the Texas Commission on Higher Education) has formal authority for approval of funding formulas and review of academic programs. Although the Coordinating Board in Texas has no formal budget review responsibilities, it has significant informal review authority as a result of its close working relationships with the Legislative Budget Board and the Executive Budget Office. In general, the coordinating agency's dominant mode of role behavior is defined by its perceived power base, which in turn hinges on the balance of expectations held by the state and institutional levels.

The set of expectations which becomes an integral element of an actor's role is a cluster of normative statements about how the actor should behave. The state level is expected to compile a balanced budget while at the same time aligning its spending priorities to meet the public's needs. Funding agencies anticipate inflated spending-agency requests. For example, because resources are scarce and the requests for funds usually exceed the available funds, state-

level actors expect to cut institutional requests to curb expenditures and to balance the state budget. Thus, the state-level review agency is seen primarily in a "cutter" role. As long as the reductions are made in requests for increases over current appropriations, state-level budget reviewers can be confident that they are satisfying their audience's expectations of responsible spending without seriously undercutting the institutions' (or other spending agencies') continuing activities. Some students of budgetary behavior attribute symbolic significance to the cutter's behavior: The balanced budget symbolizes Responsibility, while the reductions in budget requests denote Economy.[6] Role behavior opposite that of the state level is observed at the insitutional level, the "spender" in the system of roles. Generally, the institutional level is expected at least to maintain, and in most cases improve upon, the current level of services. The goal orientation of most institutional administrators is consistent with this expectation, for the administrator's status in the eyes of the institution's employees and clientele (i.e., students, government agencies, sectors of the public) is intimately related to his success in acquiring resources.[7] That is, the budget increase symbolizes Service to the institution's constituency.[8] Moreover, institutional growth is a clear sign to the state-level reviewers that the organization is a viable one and that requests for increases should receive favorable attention.

The intermediate level--the coordinating agency--is neither truly a cutter nor a spender, although it does usually display characteristic behavior in both directions. Consequently, coordinating agencies have experienced considerable role strain because of the conflict of expectations which faces any buffer level. Typically, the state-level expects coordinating agencies to control closely the application of budgetary formulas at the institutional level and to cut institutional requests (if the coordinating agency has budget review authority) in accordance with state-level projections of higher education's share of state revenues. The institutional level, on the other hand, presumes that the

coordinating agency level will only oversee the budgetary process, leaving operational decisions for the institutional level, and will defend institutional requests without reductions in state-level hearings. The values of the executive leadership of coordinating agencies are shaped in large part by intensive socialization in an academic environment, from which most coordinating agency executives are drawn. As noted earlier, however, the dominant mode of coordinating agency role behavior will depend on a balance of all these expectations and values, which is influenced by the policy environment of the state.

If one level's expectations of another level's actions are not satisfied, sanctions can be employed by the first level to encourage a change in the second level's behavior. Rewards and punishment tend to flow from the actors who have the authority and resources to provide them. Thus, the state level can withhold funds if dissatisfied with another level's behavior, or grant requested increases if satisfied. Moreover, executive and legislative spending controls--fiscal post-audits, performance audits, allotment schedules and transfer procedures--can be tightened or relaxed to fit the circumstances. Depending upon its statutory powers, the coordinating agency can adjust the level of inducements through the approval of budgetary formulas (Texas), the recommendations on institutional requests (Illinois), and the approval of new and expanded programs (Illinois and Texas). Consistent with a withdrawal of support, the institutional level might, for example, cut back high-demand programs in order to induce the state or coordinating agency level to raise the funding ceiling.

The cutter-spender role dichotomy--positions, expectations, and sanctions--can be refined somewhat, based on the historical data on the development of formula budgeting in California, Illinois, and Texas, so as to discriminate between dominant modes of cutter behavior at the state level and among dominant modes of cutter-spender behavior at the coordinating agency level. By dominant mode it is meant that more than one mode is observable at the state and coordinat-

ing agency levels, but that one mode is more prevalent that the other(s) at each level. The two dominant modes of the state-level administrative (i.e., cutter) role are the controller and manager; the characteristics of these modes are summarized in Table 4.

Table 4

Dominant Modes of State-Level Administrative (i.e., Cutter) Role[9]

Characteristic	Dominant Mode	
	Controller	Manager
Personnel skill	Accounting	Administration
Interest as a budget agency	Fiduciary	Efficiency/policy
Level of information dealt with	Individual transactions/single tasks (e.g., dollars)	Relationships between transactions/whole operation (e.g., unit costs)
Key budget stage	Execution	Preparation/ prepreparation
Focus in key budget stage	Inputs (e.g., pre-audits; fiduciary post-audits); Management audits--technical details	Outputs (e.g., management audits--program goals)

The controller role is evidenced by attention to input measures (e.g., faculty contact hours), detailed scrutiny of lower-level formula application, and pre-audits. The manager is more concerned with output measures (e.g., student credit units, degrees granted) and management audits, with particular attention given to program goals. A major distinction is the level of information aggregation handled. The controller focuses on individual transactions and the costs associated with each, while the manager deals in more aggregate terms,

concentrating on the relationship between transactions and thus program or total costs. The role configuration for the most influential state-level agencies in the three states is summarized in Table 5.

Table 5

Dominant Modes of State-Level Cutter Role in California, Illinois, and Texas

State	Dominant Mode	
	Controller	Manager
California	Department of Finance (1953-1971)	Department of Finance (1971-)
Illinois	Department of Finance * (1962-1969)	Bureau of the Budget (1969-)
	Legislative Budgetary Commission* (1962-1969)	
Texas	Legislative Budget Bureau (1960s)	
	Legislative Budget Bureau (1970s) ⟶	

*Weakly demonstrated role

At the coordinating agency level the natural spectrum of role behavior has three dominant modes--institutional advocate, neutral, and state-level advocate--which are characterized by the particular balance of expectations among the various actors in the budgetary process and by the relative influence of the various actors over the longevity of term of the coordinating agency directors. Briefly, the institutional advocate is very responsive to institutional interests and goes out of its way to support institutional requests to the state level.

The neutral arbitrator seeks to balance institutional needs with the realities of state expenditure priorities and available resources. The state-level advocate is seen as an extension of the state level, responsive to the interests of the state government vis-a-vis the institutional interests. Again, it must be noted that elements of each mode characterize all coordinating agencies, but at any particular time one mode will tend to dominate. The categorization according to dominant role behavior is based upon perceptions of the coordinating agency position that are held by actors at the state, coordinating agency, and institutional levels, and their constituencies.[10] Naturally, institutional advocates rely on the institutional level as their primary source of legitimacy, just as the state-level advocate depends heavily upon the state level. Neutral role players work both sides of the street to maintain their legitimacy and consequently have no continued source of support upon which they can rely. The coordinating agency dominant role behavior in a given state will change over time since it is dependent on the leadership style of the staff director and the political and economic environment of the state. For California, Illinois, and Texas the coordinating agency role behavior is summarized in Table 6.

Role Consensus and Stability: Sources of Structural Incongruence

The interaction between the various roles in the higher education budgetary process is evidenced by the relationship between the expectations held by the various actors and the actor's behavior. Uncertainty is minimized for all role occupants when a stable consensus exists, whereby there is high agreement about the legitimate expectations each role occupant should hold and sufficient resources available to each role occupant to provide the rewards to other role occupants in order to elicit favorable behavior in return.[11] As the expectations and the demands exerted on each other by the role occupants change, role conflict results. The formula budgeting strategies described in Chapter 5 can be seen as means employed to achieve a balance of expectations and to reduce

Table 6

Dominant Modes of Administrative Role Behavior at the Coordinating Agency Level in California, Illinois, and Texas

State	Dominant Mode: Institutional Advocate	Neutral	State-Level Advocate
California			
(Department of Education)	X (1953-61)		
(Coordinating Council for Higher Education)		X (1961-74)*	
Illinois			
(Board of Higher Education)	X (1962-65)** [Browne regime]		X (1969-73) [Holderman regime]
		X (1965-68) [Glenny regime]	
		X (1973-74)** [West regime]	
Texas			
(Texas Commission on Higher Education)	X (1959-65)		
(Coordinating Board)		X (1965 -)	

* Weakly demonstrated role
** Non-formula years (instructional area)

each role occupant's uncertainty. Two potential sources of structural incongruence are the values held and priorities assigned by each role occupant and changes in the leadership and staff composition of organizations at each level. Together, these two factors have a significant impact on the flow of communications between role occupants and the degree of mutual trust and confidence.

Values and Priorities. One would expect that high role consensus would obtain when the values and priorities of the role occupants were either the same or congruent. From the data, it appears that this high congruence among formula users is a necessary condition for the successful introduction of a funding formula. In Texas, for example, the University of Texas and the smaller institutions sought a uniform funding formula for different reasons. At the same time, legislators favored the formula as an escape from the political pressure imposed by individual institutions. Similarly, the California Department of Finance wanted to avoid the annual conflict with the institutions, whereas the colleges needed a funding methodology which guaranteed an adequate resource base during an era of growth. (The same argument is true for relationships between the Board of Higher Education and the Teachers College Board institutions in Illinois.) Thus, the rationale offered by the institutional-level and state-level role occupants in each state was different, yet mutually reinforcing. In each case the acceptance of a new decision rule reduced the uncertainty inherent in the budgetary process for all role occupants.

The dominant mode of the state-level cutter role is closely correlated with the degree to which the states and institutional levels agree on expenditure priorities. In all three cases the more passive controller mode was manifest during the growth era of higher education (the 1950's), when higher education was the state level's highest budget priority, reflecting society's demand for more educational opportunities. This high priority was consistent with the institutions' natural propensity for expansion, which, in part, is an organizational

strategy to reduce uncertainty.[12] And as long as the coordinating agency level managed the operational details of the budgetary process and provided a buffer between the state and institutional levels, thereby reducing the potential for conflict resulting from a direct interaction of roles, the controller mode was adequate to contain state spending within acceptable bounds.

Disagreement between all three levels over the rate of institutional growth has been a principal source of role conflict over the last ten years. During the late 1960's, institutions in California and Illinois threatened to expand at a faster rate than the state treasuries could afford, just as higher education began to meet stiff competition from other social services for scarce state resources. To understand the significance of this development, one must be sensitive to the actors' roles. Generally, when expectations are not satisfied, a natural reaction is to employ sanctions to reshape the behavior of offending role occupants. The California Department of Finance's implementation of tighter control measures, including detailed pre-audits and technical management audits, was intended to serve this function. However, a most effective way to change another actor's behavior is to alter directly his expectations. Since budgetary formulas seem strongly to condition institutional fiscal expectations, the most straightforward procedure for curbing the demands is to modify the formulas or devise new decision rules. This latter strategy was exercised by the state levels in California and Illinois as a direct consequence of pressure from elements in the environment external to the role occupants in the budgetary process. First, the decreasing societal demand for higher education, created in part by leveling and declining enrollments, has been reflected in a lower spending priority for higher education. Secondly, the governors of California and Illinois have sought a more active role in managing the state budget, especially in light of the ever increasing number of competing demands made on state resources. In fact, the abandonment of the funding formulas then in existence

in both states occurred during the administrations of very economy-minded governors. Thirdly, and closely related, politicians attempt to keep tax levels as politically invisible as possible. Most Illinois public officials believed, for instance, that higher education's fiscal excesses were responsible for the assessment of a state income tax. This movement toward a more active state-level role characterizes the shift in California and Illinois from a dominant controller mode to a manager mode at the state-level within the last five years.

The higher education sector in Texas has only recently begun to feel the same pressure of competing spending priorities experienced somewhat earlier by California and Illinois. Consequently, the Legislative Budget Board is just beginning to show signs of a shift toward a manager cutter role. The Legislative Budget Board is currently in a good position to assume a more active cutter role while retaining the existing formula structure. Traditionally, the Legislative Budget Board and the Executive Budget Office have been concerned chiefly with the total dollar costs of higher education, characteristic of a manager mode. (Admittedly, these agencies have shown little interest in the programmatic interplay between formula areas other than to recommend specific percentages of the Coordinating Board formula in each area to balance the total.) More importantly, the state level has never raised institutional level expectations by regularly funding at the Coordinating Board-recommended rates. Institutions usually anticipate receiving something less than 100 percent of formula. Thus, the state level's long-time strategy will facilitate the reconstruction of institutional expectations within the context of the present formula structure.

Leadership and Staff Composition. The dominant coalition at each level will establish the organization's priorities based on a value structure representing the composite ideology of the coalition. Since the structure of the coordinating agency level is less diffuse than that of the other two levels, an

examination of the leadership style of the dominant coalition of the coordinating agency leads to a better understanding of the agency priorities and its dominant mode of behavior.

The leadership style of neutral coordinating agencies is a mix of political sensitivity to state-level interests and professional concern for the quality of the educational system. The neutral's power rests on its ability to check the influence of the state and institutional levels so that one level does not have a significantly greater impact on higher education policy, especially on fiscal matters, than the other. In Illinois under the Glenny regime and in Texas, the coordinating agencies had to restrain the aspirations of segments of the higher education community to achieve a balance of expectations. In both states the coordinating agencies used a combination of formulas and program review powers to control institutional expectations. The Illinois Board of Higher Education used the two approaches to provide side payments, in a game-theory sense, to the emerging universities to encourage their more rapid growth and to effect a balance of power between the smaller institutions and the University of Illinois and Southern Illinois University. The Texas Commission on Higher Education used the approaches to hold the line on the expansion of graduate programs and thus cool the desire of the former teachers colleges to become prestigious graduate institutions.[13] There appears to be a tendency for the neutral coordinating agencies to use the formulas to favor the higher education sector as a whole, probably because the "extra" resources are needed as inducements to maintain an equilibrium of expectations at the institutional level. The Illinois formula procedures were admittedly generous. The fact that the Legislative Budget Board in Texas invariably reduces the Coordinating Board rate schedules and the lack of evidence of institutional manipulation of the formula or data base both seem to indicate that the Coordinating Board formula rates are liberal.[14] The Illinois Board of Higher Education maintained its neutrality by recognizing signals from the governor and legislature and by making some highly visible--

and in some cases symbolic--cuts in institutional requests.[15] The Texas Coordinating Board, on the other hand, gains its neutral classification because the state-level agencies look upon it as a staff arm, conducting research and policy studies and providing information and informal guidance.

The coordinating agency leadership in California, though demonstrating a neutral role, has not been as aggressive as the Illinois and Texas cases since the Coordinating Council for Higher Education was created in the early 1960's. The Board of Education was a state-level agency in title, but by position it was an intermediate level in the path of budget request submissions. Although the small higher education unit of the Board staff did not have significant budget review powers, it did preserve to some extent an equilibrium between state-level and institutional-level interests through its close working relationship with both levels. The Coordinating Council, in turn, has had rather non-committal leadership which has seen the mission of the Council to provide research and policy-study services to interested parties. As evidence of its unwillingness to take a more active role in the budgetary process, the Council leadership declined to serve as a central information request clearinghouse. [The newly created Postsecondary Education Commission, which replaces the Coordinating Council, plans to act in this capacity.] In summary, the Council has not played a role in the budgetary process.

With too few cases from which to judge, it is difficult to make an assessment of the impact that leadership has on the institutional-level and state-level advocate roles. However, the state-level advocate role played by the Illinois Board of Higher Education under James Holderman had several features which might be characteristic of such roles in other settings. In particular, it illustrates that new leadership is in a good position to change the major goals, and hence role orientation, of an organization. First, Holderman was a "political" appointee, personally selected by the governor. The selection appears to have

been made more on the basis of the expected close working relationship with the governor than of Holderman's previous limited administrative experience. Secondly, the Board of Higher Education staff was enlarged at the direct urging of the governor. This move was congruent with the governor's desire to manage the spending agencies more closely. Holderman's choice of staff did nothing to improve the Board's credibility at the institutional level, because he selected, for the most part, individuals inexperienced in higher education policy matters. This choice of staff notwithstanding, the Board's state-level advocate role was an immediate response to state-level pressure, itself a consequence of the state's weakened fiscal situation. The Board was given the unenviable task of cutting back higher education spending. Under such forced retrenchment, especially after a period of rapid expension, it was very difficult for the institutions to look upon the Board as anything except an extension of the Bureau of the Budget. The strategies embraced by the Board--first productivity cuts and secondly the abandonment of the unit cost formula and the imposition of a statewide reallocation procedure--are not necessarily characteristic of the state-level advocate role only; they are, however, a natural reaction to the shift to the dominant manager mode at the state level.

Changes in staff composition, as well as leadership styles, mirror altered role behavior, especially at the state level in California and Illinois. Thus, the change in the California Department of Finance's dominant cutter role can be traced in part to staff changes. Until the early 1950's the Finance staff was heavily comprised of accountants--hence the control mode noted earlier. Beginning around 1954-55, Department of Finance executives decided to balance the staff with more analytical personnel, people with public administration rather than CPA backgrounds. By the end of the 1950's Finance had largely succeeded in converting the staff into a more analytical body. A new dominant coalition emerged in Finance in the early 1960's--one oriented more toward tight operational control, as manifest in the strategy of program management

audits. With the support of economy-minded Governor Reagan, the upgrading of the analytical capability has continued. Moreover, with the infusion of younger staff, the dominant coalition has gradually shifted to the manager mode.

A similar pattern was traced in Illinois. The Department of Finance and the Legislative Budgetary Commission were weak controllers in the budgetary process until 1969. Anton notes that the Department of Finance had little more than a watchdog-accountant's role:

> The term 'budget,' from this department's point of view, means nothing more than a statement of items (classified by object) to be purchased during a given period of time as measured by the dollar amounts devoted to each object, and the fund from which such accounts are to be drawn. Other kinds of meanings, involving consideration of planning of program or fiscal control are obviously not relevant.[16]

The Budgetary Commission functioned as a consultative body to the governor, in essence rubberstamping the governor's budget recommendations because it did not have the authority or the staff to determine budget or appropriation figures. As was the case with the Department of Finance, the Budgetary Commission was not a policy-oriented body:

> As far as the commission is concerned, then, there is no such thing as a 'total budget' or an over-all 'financial plan.' The commission deals with specific amounts requested by individual agencies on a piecemeal basis, it fails to give systematic attention to capital requests, it avoids requests for new programs, and it gives only the barest kind of formal review to programs supported by special funds and the largest state agencies. . . .[17]

In addition, the Budgetary Commission only seconded the recommendations for budget cuts made by the Board of Higher Education.

The shift of the state-level to a manager cutter role in Illinois originated

in a major restructuring of the executive budget office, with the Bureau of the Budget replacing the Department of Finance and acquiring a respectable analytical staff and significant budget review authority. Moreover, an annual budgetary cycle was instituted to replace the biennial periods. The extent to which the Bureau of the Budget has intervened in higher education budgetary policy affairs has depended largely on the working relationship between the director of the Bureau of the Budget and the executive director of the Board of Higher Education, and on the governor's wishes. As a former Board of Higher Education staff member noted: "The Bureau of the Budget can be extremely arrogant if the governor does not control it." Although the relationships change over time, the Bureau of the Budget has clearly carved out for itself an important position in higher education policy matters.[18] Generally, the Bureau does not review individual institutional requests, but deals only with the Board of Higher Education recommendations. It is concerned primarily with the overall totals and is less concerned with the mix between dollars and programs, although this was a controversial issue between the Bureau and the Board of Higher Education during preparation of the FY 1974-75 budget.[19] The basis for the Bureau's recent managerial interest in higher education budgetary policy is common to many states. Higher education was overwhelmingly the favored agency in these states, and the executive budget offices cannot continue to give increases to higher education without tax increases, which is a policy alternative few governors favor..

Trust, Confidence, and Formula Legitimacy. The direction and volume of the communications flow in the budgetary process depends on the degree of trust that exists between role occupants. Trust, in turn, is a function of the congruency of value structures and priorities and leadership styles. Thus, one would assume that the most communications would flow when there is low role conflict or high structural congruence. Trust is a surrogate for control; the

greater the trust, the greater the certainty that affairs are properly handled, and the less the need for control measures. Thus, the legitimacy of a budgetary formula is a function of the extent to which it is manipulated beyond certain mutually agreed-upon bounds by each level in the budget submission and review stages of the budgetary process.

The budgetary formula represents a mutual set of expectations held by the role occupants in the process; in a theoretical sense, the budgetary formula denotes a crude Pareto optimum for all participants, assuming that all interests have been equally represented. Yet because value structures, priorities, and leadership styles are not always compatible, mutual decision rules must be designed and applied with the realization that, if there is to be any semblance of stability in the system of roles and role behavior, each role occupant needs some flexibility and maneuverability. Moreover, as the environment external to the system of roles becomes more complex, there tend to be more environmental impingements upon the budgetary process. As role occupants react to changes, internal and external to the system of roles, they seek to reduce their uncertainty through the accumulation of slack resources and the shifting of uncertainty to other role occupants. One will note that most of the formula budgeting strategies employed to acquire excess resources described in Chapter 5 were successful within certain bounds. The width of this "zone of maneuverability" varies over time as a function of a number of conditions, among them the state fiscal picture, political and agency leadership, and the societal demand for higher education. This zone is what affords each role occupant the opportunity to account for its unique needs and to adapt to its particular situation.

Within the context of this turbulent internal and external environment, how do budgetary formulas become legitimized? The data indicate that the interorganizational committee, or task force structure, was successfully employed

for this purpose in all three cases. By cutting across organizational lines, the task force concept promotes trust and confidence among the participants by providing an opportunity for direct communication and feedback. The task force structure is designed for flexibility and adaptability; within that framework, coordination through mutual adjustment is accomplished.[20] Texas was the most successful of the three states in the use of the task force concept in that all three levels participated to varying degrees in the establishment of the budgetary formulas and evidenced the best understanding of each other's needs and problems. Undoubtedly some of the success lies in the surprisingly close collegial and social relationships which bind individuals within and between the three levels.

The Illinois Board of Higher Education's use of the Budget Formula Committee was a model for coordinating agency and institutional cooperation, because the Committee functioned effectively to balance interinstitutional and Board of Higher Education interests. The Illinois approach was seriously flawed, however, in that it did not incorporate state-level agencies. This omission did not hinder the Board of Higher Education's success during the Browne and Glenny regimes because the Board was then the "state-level" (the legislature and governor had very small fiscal staffs). Later the omission did harm interlevel relations, primarily because the legislators did not understand the technical details of the formula and could not appreciate the institutional-level funding expectations.[21] The efficacy of the task force concept was highlighted by the Holderman regime's discontinuation of the Budget Formula Committee. Although the Illinois Board reportedly was looking out for the best interests of the universities in holding out against state-level imposed expenditure targets during Holderman's tenure, these intentions were not communicated clearly to the institutions, nor was there any interorganizational mechanism which could have worked to reduce institutional demands for resources. These events point out a

dilemma. Task force structures appear to facilitate the implementation of funding decision rules, at least if resources are plentiful. On the other hand, when there are fewer dollars available, there seems to be a tendency to centralize the legitimation process. In that case only institutional leaders (during the Holderman regime) or the system-level executives (during the regime of Cameron West, Holderman's successor) are consulted in order to avoid some of the conflict arising from the allocation of scarce resources. This legitimation strategy closely resembles Rein's "consensus of elites."[22] This behavior in times of relatively scarce resources may explain why the California State University and Colleges systemwide office assumed the burden of developing the SCU/FTEF formula, although the colleges, in conjunction with the Department of Education and the Department of Finance, had successfully employed the task force concept to advance the WTU faculty staffing formula.

Rein notes that what here has been labeled the task force approach may not always be successful:

> [A common assumption is that] the process of involvement and participation might lead to self-education and the acceptance of the need to change. The implicit theory of bureaucracy on which this belief rests is that the sources of organizational rigidity are largely ignorance and faulty communication. If a context were provided in which institutional representatives could more freely communicate with one another, the validity of the need for change would more readily be recognized and accepted. Such a theory is, however, incomplete, for it ignores the existence of the more fundamental conflict of values and interests among institutions that more open communication might serve to exacerbate rather than to alleviate. . . .[23]

The task force approach appears to be viable when there is sufficient flexibility in the formula procedures or there are enough inducements to alter role expectations, so as to override any conflict of values and interests. Participatory

decisionmaking may be avoided, on the other hand, when there is insufficient slack to buffer potential role conflict.

The legitimation of budgetary formulas, which obtains from their appearance as rational and coherent decision roles, seems less significant than that which results from the direct involvement of role occupants. Formula-generated requests do have a built-in legitimacy in the sense that institutions can request resources without having to provide considerable justification, but at the same time funding agencies may require equally little justification to fund at only a percentage of the formula, as the Texas experience demonstrates.[24] Some participants in the budgetary process are satisfied with the symbolic equity represented by the use of objective data and "uniform" guidelines--where equity is nothing more than a tolerable level of funding inequality among institutions. In fact, the legitimacy inherent in a formula is derived less from the implied objectivity of the procedure and more from the quality of the inter-agency relationships and the mutual understanding of the actors in the process.

Trends. A new rationale for formula budgeting, shaped by the fiscal realities of the 1970's, is emerging at the state level in California, Illinois, and Texas concurrent with a shift toward the manager cutter role. The manger is inclined to use more flexible procedures, such as indicators, so as to be less constrained in making adjustments and less tied to formula-generated totals. With this trend, there is growing concern that if the state level becomes involved in the review of institutional programs, the individuality of programs will tend to be destroyed. In this light the formula is perceived as an inducement in that it signifies to institutions the desires of the state level but does not force the institutions to budget that way. If resources were appropriated on a uniform dollars-per-student basis to comparable institutions, for example, an institution would not ask for an expensive new program unless it could accommodate the program within its allocation. The institutional level both gains

and suffers as a result of the introduction of less rigid decision rules. On the positive side, the unique characteristics and problems of each institution are likely to be given greater consideration than in the past. On the negative side, the institutions receive less guidance in constructing their budget requests--that is, indicators do not clearly suggest how much to request.

FORMULA STRUCTURE: A BALANCING MECHANISM

While the system of roles provides the macro-perspective of formula budgeting behavior, the formula structure sets the micro-perspective (i.e., technical framework) for the same behavior. A formula structure can change as a result of political and economic changes in the environment and shifts in administrative roles, but once the framework is set it becomes the first reference point for consideration of formula budgeting behavior. The complexity of formula structures for California, Illinois, and Texas is evidenced in Figures 3 and 4. The impact of formula structure on formula budgeting strategies will be examined by considering each dimension of structure in turn--first, the data base and quantitative elements of the formula, and secondly, the manner and scope of coverage of formula application.

Data Base and Quantitative Elements of Formula

The dimensions of formula structure which are probably the most important determinants of the potential slack at the institutional level are the degree to which the numerical factors in the formula (e.g., unit costs or rate schedules) are negotiable, on the one hand, and the type of data base against which the formula is applied, on the other. From the data summarized in Figures 3 and 4, one can draw several conclusions about the interplay of formula structure and institutional and funding agency motives with the flexibility to use and control funds.

Figure 3

Degree to Which Numerical Factors in Formula Are Negotiable vs. Manner of Formula Application in California, Illinois, and Texas

Manner of Formula Application	Degree to Which Formula Coefficients, or Numerical Factors, Are Negotiable: Low Negotiability	High Negotiability
Comprehensive		X Texas[1] X California[2]
Incremental	X Illinois (3)	X Illinois[4] X Illinois[5] X California[6]

Notes:

(1) Faculty Salaries Formula; Departmental Operating Expense Formula.

(2) WTU Formula, 1953-71. The formula is considered reasonably "negotiable" in the sense that there was considerable flexibility in the establishment of modes of instruction; maximum class sizes and breaking points were firmly set, however.

(3) Unit-Cost Formula: Instruction minus Physical Plant, 1967-1972.

(4) Formula for Additional Students, 1965-67.

(5) Formula for Faculty Salary Step and Merit Increases, 1963-1972.

(6) SCU/FTEF Formula, 1972-present. (There is more negotiation between the state and system levels than between the system and institutional levels.)

Figure 4

Type of Data Base Against Which Formula is Applied vs. Manner of Formula Application for California, Illinois, and Texas

Manner of Formula Application	Type of Data Base Against Which Formula is Applied: Historical	Type of Data Base Against Which Formula is Applied: Projected
Comprehensive	X Texas (1)	X California (2)
Incremental	X Illinois (3)	X Illinois (4) X Illinois (5) X Illinois (6) X California (7)

Notes:

(1) Faculty Salaries Formula; Departmental Operating Expense Formula.

(2) WTU Formula, 1953-1971.

(3) Formula for Faculty Salary Step Increases, 1963-1972.

(4) Formula for Faculty Salary Merit Increases, 1963-1972.

(5) Formula for Additional Students, 1965-1967.

(6) Unit-Cost Formula: Instruction minus Physical Plant, 1967-1972.

(7) SCU/FTEF Formula, 1972-present.

In Texas and Illinois, concessions were made by both the funding agency and the institution over the negotiability of formula coefficients and the flexibility of the data base against which the formula was applied. The Texas formula rate schedules are reasonably negotiable in order to accommodate the existing expenditure patterns among institutions and to incorporate cross-state comparative data. The negotiable rate schedules help preserve the status quo as much as possible in the statewide pattern of expenditures; over time, this accommodation among institutions tends to encourage a form of equity. Secondly, the rate schedules are not based on actual costs and can be adjusted to bring Texas institutions into parity with those of other states through the introduction of the appropriate comparative data. Thus, the institutions, through the Coordinating Board committee structures, have the flexibility to set levels of potential slack in establishing the formula rate schedules. The Legislative Budget Board and Executive Budget Office control the institutional-level flexibility and maintain their own flexibility in two ways. First, the state-level agencies can and do set their own rate schedule, usually at a level lower than that recommended by the Coordinating Board. Secondly, the rate schedules are applied against the historical student credit hour productivity of the second year of the preceding biennium, thereby deflating the institutional requests during a period of enrollment growth, when the actual enrollment and student credit hour figures will be greater than those upon which the appropriations are based.[25] In periods of significant enrollment growth the legislature sometimes appropriates contingency funds for faculty salaries to compensate for the additional enrollments and to reduce institutional uncertainty. Surprisingly, the institutions do not attempt to compensate for the state-level restraints on funding by inflating the rate schedules before presentation to the Coordinating Board and by misrepresenting historical data (which is difficult to do because the data are periodically audited).

Similar tradeoffs were made in the Illinois formulas by the Board of Higher Education and the institutions to neutralize each other's operational flexibility. The interim formula for additional enrollments used in the 1965-67 biennium incorporate no such tradeoffs but favored the institutions on the whole. However, the negotiated S/F ratios and average salaries used in the interim formula did enable the Board of Higher Education to accommodate all institutions under a single uniform formula, and worked to the Board's advantage in that respect. The use of a projected data base against which to apply the interim formula clearly benefited the institutions, some of which characteristically overestimated enrollments to gain extra resources.[26] The unit cost formula for additional enrollments rectified the imbalance in favor of the Board of Higher Education. The use of two year old unit costs as formula rates tended to deflate institutional requests; moreover, the averaging of unit costs allowed the institutions with lower cost programs to "earn" extra revenue, thus bringing these institutions closer to the statewide average and working in favor of the Glenny regime's balance-of-power strategy. Furthermore, any flexibility that institutions were to gain from using projected student credit hour productivity was limited by the Board's tolerances on enrollment projections and the payback policy on appropriations in excess of what was actually required. The only potential flexibility for the institutions when using the faculty salary increases formula came from applying the rates for merit increases against projected productivity data; again, tolerances on the projections limited the potential slack. And although the salary increase rates were "negotiated" in the sense that they were judgmental, they were usually based more on what the market would bear than what the institutions truly wanted. This slight imbalance of formula coefficients and data base tradeoffs in favor of the Board of Higher Education partially explains why the institutional strategies employed to gain slack resources--enrollment overprojections to the limit of the tolerance, hidden enrichment in the "New Programs and Instruction" category of the budget request,

"honest padding," slack from sources not included in the formula--were shaped around the formula structural constraints (e.g., statewide average costs, two year old cost study data, 50 percent funding of new program areas).

No tradeoffs of flexibility were made in either version of the California State Colleges' faculty staffing formula. This behavior reflects the imbalance in control of the budgetary process which has always existed between the institutions and the Department of Finance. The WTU formula gave the colleges considerable freedom to establish unique staffing patterns and hence faculty needs. Part of this freedom evolved from the formula procedures which enabled the colleges to project enrollments on a course-by-course basis. The state-level tolerances on enrollment projections were not imposed until the 1960's; before then actual enrollments usually exceeded the estimates so that supplemental appropriations had to be budgeted. In essence, the colleges controlled the environment in which the formula was applied, and because the Department of Finance felt obligated to fund formula-generated requests, the colleges had a substantial influence over the outcomes of the process.

Control of higher education budgeting in California reverted to the Department of Finance under the SCU/FTEF formula, more because of a shift from a comprehensive to an incremental application of the formula than to a change in formula coefficients or data base. Now, however, the institutions no longer project the pattern of instructional modes but are confined to making incremental changes in running three-year SCU/FTEF averages at the program level. The Department of Finance negotiates only a systemwide SCU/FTEF ratio with the Systemwide office and is relatively unconstrained by the historical pattern of ratios. Thus, Finance budgets primarily on the basis of resource totals and shifts to Systemwide the responsibility (and uncertainty) for allocating funds to the institutional level.

In summary, two observations can be made about the relationship of formula budgeting strategies with the degree to which formula coefficients are negotiable and the type of data base against which the formula is applied. First, to insure a formula-driven budgetary process in which neither the funding agency level nor the institutional level totally dominates, it is necessary to sacrifice some institutional flexibility and funding agency control. This rough balance is achieved by applying formula coefficients, or rate schedules (which have low negotiability) against a projected data base or by applying rate schedules (which have high negotiability) against an historical data base. The strategies adopted by the various levels will seek to maximize operational flexibility within the context of the constraints established by the formula structure balance. Where such a balance is missing--with institutions able to manipulate a formula at will, or funding agencies tightly controlling the dimensions of institutional requests--there is a good possibility that the formula procedures will lose their legitimacy, as California's experience with the WTU formula illustrates. A formula can lose its legitimacy at the institutional level when expectations created by the formula are not fulfilled in the appropriations--when, as in Texas, a formula is funded at such a low percentage of the recommended rates (e.g., Organized Research) that factors added next biennium to the appropriated base to account for inflation turn out to have little significance. Secondly, an important determinant of the kinds of strategies and counterstrategies practiced in a system is the formula's coverage; that is, what is left out of a formula may be more significant than what is included. Institutions tend to seek slack by hiding requests for items which should be governed by a formula in the nonformula areas of the operating budget instead; thus, the larger the nonformula portion of the budget, the greater the opportunity for "end runs." Moreover, this overfunding of some areas of the budget can arise from nonstate sources of funds, such as federal research monies and foundation grants. Consequently, funding agencies will tend to resort to budget request strategies which pinpoint the duplicate funding.

Manner of Formula Application: Incremental vs. Comprehensive

The distinction between an incremental and a comprehensive type of formula application is not quite the same as that between incremental and zero-base budgeting. An incremental formula is one applied against changes from the last budgetary cycle's base data; a comprehensive formula is one applied against the entire set of data, including both the base data and changes to that base. The use of incremental or comprehensive formulas says little about the quality or extent of review of the activities and programs represented by the budget. In contrast, incremental budgeting implies a cursory review of ongoing programs, whereas zero-base budgeting alludes to a thorough reevaluation of budget base programs from the ground up. Thus, the meaning of the terms "incremental" and "comprehensive" formulas is limited. However, an important aspect of formula budgeting to be considered in conjunction with the manner of formula application is the nature of budget base review.

What can be concluded about the relative potential for institutional-level slack when comparing the incremental and comprehensive formulas? Theoretically, at least, a comprehensive formula framework as in Texas appears to provide institutions with more fiscal flexibility and opportunity for slack than does the incremental mode of application because the budget base is reevaluated and funded according to new formula rates every budgetary cycle, in addition to the funding of changes to the base. However, incremental formula applications usually include some adjustments to the base for general factors of inflation, as in Illinois' formula precedures and California's SCU/FTEF formula. Real flexibility evolves from the freedom to alter the environment of formula application, as in the case of California's WTU formula. Changes in rate structures for the Texas formulas represent only marginal alterations in the instructional patterns (e.g., S/F ratios), whereas annual changes in the modes of instruction under the WTU formula were more than just at the margin. Thus, institutions appear to be

as fiscally constrained by comprehensive as by incremental formula applications, primarily because the rate schedules in both cases are adjusted only incrementally over time.

There is no pattern of approaches to budget base control present in the three cases examined. Nonetheless, the amount of state-level interest in budget base control indicates the directions that review strategies (and institutional-level counterstrategies) will take. Until very recently, there had been no review of budget base programs in California, Illinois, and Texas. Since the introduction of the SCU/FTEF formula in California, however, the Department of Finance has probed the aggregated (systemwide) base by focusing on topical or suspicious areas of the budget. In Illinois, which no longer uses a formula procedure in the instructional area, the Board of Higher Education has used base cuts determined by enrollment criteria and across-the-board productivity reductions in conjunction with new-and-continuing-program review to shake up continuing activities and shift responsibility for change to the campus administrations.

Historically, Illinois and Texas have controlled the size of the budget base through the formula procedures in use at the time. During the Glenny regime, for example, the Illinois Board of Higher Education used the balancing tactic of comparing actual institutional budget bases with a theoretical standard to identify and compensate for any budget base excess or deficiency. But the Texas Legislative Budget Board's review process best illustrates the fact that formula budgeting can be very incremental, even in a system with a comprehensive formula. Each formula area is first reviewed separately, and then final adjustments are made in relation to the other areas. In the initial review, the Legislative Budget Board staff first determines the percentage of the Coordinating Board's recommended formula which is sufficient to maintain the current expenditure level in the formula area. Then the Legislative Budget Board staff proposes

If a significant difference does not exist between the comprehensive and what it considers a reasonable increase for the next budgetary cycle, and this increment is added to the current expenditure level to set the percentage of formula that the Legislative Budget Board will recommend. Thus, the Legislative Budget Board staff "backs" the results of an incremental decisionmaking process into the formula structure.

Texas and Illinois were also able to control the rate of budget base growth by tying the funding of new programs to their formulas. As discussed in Chapter 5, Texas forced institutions to fund new programs through internal reallocation or slack resources by using historical student credit hour productivity as the basis for appropriations. Similarly, the Illinois Board of Higher Education financed only one-half the projected costs of new programs, expecting the institutions to make up the difference on their own.

In summary, the one characteristic which these states employing the comprehensive and incremental modes of formula application had in common (except for the WTU formula in California) was that they controlled the rate of growth of the budget base by controlling the size of the increment to the base. Although this point is certainly not startling, having been addressed by Wildavsky and others, it does call attention to the incremental nature of formula budgeting--that is, the formulas controlled changes in the budget base at the margin. Moreover, the use of formulas themselves in no way guarantees the adequacy of ongoing activities, for program review is a completely separate process. Program review will become more prominent, however, as higher education's share of state resources declines with shrinking enrollments and budget base-controlling strategies become more and more obsolete. The emphasis will shift to the reallocation of resources and, other than methods which track enrollment shifts, there are no magical formulas to make these kinds of decisions easier or more palatable.

incremental application of formulas in California, Illinois, and Texas, one might ask the following questions: Why did California shift from a comprehensive to an incremental formula, and why did Texas succeed in introducing a comprehensive formula framework, while Illinois failed in its efforts to shift from an incremental to a comprehensive formula?

In answer to the first question, the California State University and Colleges System office (which devised the SCU/FTEF formula) needed a method to allocate resources to individual institutions on the basis of historical patterns of student credit hour productivity while continuing to satisfy a Department of Finance desire for control of the dollar total appropriated to the institutions. The use of the running three-year SCU/FTEF ratio average by discipline enabled the institutions to use an historical data pattern to avoid seriously disrupting the status quo, and the application of these to changes in the budget base permitted the Department of Finance sufficient control over the growth of the base.

Texas succeeded where Illinois failed by reducing the uncertainty institutions faced in making the transition to a comprehensive formula. First, the Texas Commission on Higher Education (and later the Coordinating Board) gradually recommended formulas for distinct areas of the operating budget, but only after each formula had been tried on a trial rule-of-thumb basis. In the course of the last 15 years, approximately 85 percent of the operating budget has been encompassed by formulas. Secondly, the formulas that were finally recommended reflect more the status quo in the pattern of appropriations than in the pattern of actual costs and provide fiscal stability; in fact, the Texas formulas represent the formalization of old routines. Clearly, the Illinois Board of Higher Education was handicapped in its attempt to switch from an incremental to a comprehensive application of the unit-cost formula in one budgetary cycle. There was tremendous institutional inertia against change, especially against the discarding of routines. Moreover, the uncertainty of the effects on institutional budget bases

was too great for institutions to bear without considerable opposition--politically, it was difficult to take dollars from one institution and transfer them to another. The change might have had unanticipated effects on the formula incentive structure. In particular, the larger, wealthier institutions feared a shift in the distribution of rewards in favor of the emerging universities. Even the technical difficulties were immense: unit-cost accounting as envisioned by the Board of Higher Education was still in its infant stages, and no satisfactory means had been suggested to account for the start-up costs of emerging institutions. Finally, there was no compelling fiscal urgency, as in the California case, to drop the successful incremental formula. Without such pressure, which is usually necessary to override organizational inertia generally, the only way to shift from an incremental to a comprehensive formula is to make a gradual transition. Shifts in the other direction--from a comprehensive to an incremental mode of application--should be less disruptive because uncertainty arising from a poor understanding of cause and effect relationships will be confined to programs and activities at the margin of the budget.

A lesson to be learned from the historical development of formulas in California, Illinois, and Texas is that a necessary formula change is often ponderously slow and sometimes particularly unresponsive to a state's condition of financial stress. The time lag between the first manifestation of pressures from formula-generated totals and the ultimate decision to abandon the formula--measurable in units of years in the case of California and Illinois--is a reasonably accurate measure of organizational or system response time to environmental factors and an indirect indicator of the organizational inertia or costs of change in the system. Trust relationships develop over the years in the budgetary process. These relationships can become quite permanent because perceptions are slow to alter. Consequently, the erosion of such relationships can also take considerable time, lending stability even to a deteriorating situation and working to preclude the sudden introduction of compensatory controls. Budgetary formulas certainly

proved their usefulness in the three cases, but they also outlived their effectiveness in their original forms. Organizational learning can be quite slow, therefore, in budgetary matters, especially when it involves changing funding decision rules. The consequence of delayed formula alterations has been a greater degree of uncertainty at all levels as outmoded decision guidelines prove insufficiently flexible and become increasingly unworkable in new situations.

Why are organizations apparently so slow to learn and adapt, at least in the long run? Specifically, why were formulas abandoned with such suddenness (in California and Illinois)--that is, why were the state, coordinating agency, and institutional levels unprepared for this eventuality? The disruptiveness of the formula abandonment seems indicative of learning failures. One reason is that learning implies change, which is a fundamental ingredient of uncertainty. Just as members of organizations seek stability in everyday life, so do organizations (as aggregations of individual members) endeavor to develop and maintain stable interorganizational relationships. The short-run adaptation of formula decision rules observed in the three cases--for example, the adoption of new parameters, the modification of formula rates, and the expansion of the formulas to cover new areas of the budget--is evidence of this striving for stability. Actors in the budgetary process--individuals and organizations--focus on changes which are easy to make because they are less disruptive. This inclination led budgeteers at all levels in the higher education budgetary system to overlook the cumulative effect of the short-term adjustments. Just as the needs of the members sometimes displace the goals of an organization, so too can the needs of organizations displace the objectives of interorganizational associations.[27] In the case of budgetary formulas, the convenience of an agreed-upon funding rule for all actors supplanted concern for the states' fiscal viability (i.e., institutions tried to maximize formula-generated appropriations) and the institutions' operating

flexibility (i.e., the states imposed fiscal monitoring and control procedures to counter growth strategies).

Learning comes, in large part, from hindsight; individuals and organizations learn from experience what policies succeed or fail in particular situations. As Cyert and March note:

> . . . when an organization discovers a solution to a problem by searching in a particular way, it will be more likely to search in that way in future problems of the same type; when an organization fails to find a solution by searching in a particular way, it will be less likely to search in that way in future problems of the same type. Thus, the order in which various alternative solutions to a problem are considered will change as the organization experiences success or failure with alternatives.[28]

But circumstances do not repeat themselves often enough in real life for organizational actors to always put their learning into practice. Circumstances which on the surface appear repetitive usually involve a different set of constraints which require projecting beyond experience in order to fit the new conditions. Moreover, it is difficult to optimize learning. Experience teaches what actions succeed or fail, but usually not why or "by how much." Individuals and organizations seldom learn how different organizational processes can handle the same set of problems. In other words, if a strategy works, the tendency is to repeat it until it fails.

Budgetary formulas work to delimit the range of possible experiences, and hence learning. Formulas become codes and frameworks for communicating information about policy alternatives and as such serve as information filters. While this filtering action protects members of organizations from information overload, it also reduces the volume of potentially important signals from the environment. Formulas are abstracted models of the complex of organizational relationships, and as such they can provide a distorted image of organizational reality, as discussed in the following chapter.

FOOTNOTES

Chapter 6

[1] For an excellent argument for the need to examine an important determinant of budgetary outcomes--controversies over policy and priorities at the program level--see Peter B. Natchez and Irvin C. Bupp, "Policy and Priority in the Budgetary Process," The American Political Science Review, 67, No. 3 (September 1973), pp. 951-963.

[2] The role system framework outlined here is a simplification of the conceptual work of Neal Gross, Ward S. Mason, and Alexander W. McEachern, Explorations in Role Analysis: Studies of the School Superintendency Role (New York: John Wiley & Sons, Inc., 1957) and Todd R. LaPorte, Organizational Response to Complexity: Research and Development as Organized Inquiry and Action--Part I. Working Paper No. 141 (Berkeley: Center for Planning and Development Research, University of California, Berkeley, 1971), chs. II and III.

[3] Thompson, J.D. Organizations in Action, New York: McGraw-Hill, 1967. pp. 19-21.

[4] LaPorte, Organizational Response to Complexity, p. 100. The analogous situation in a business firm is described by Louis R. Pondy and Jacob G. Birnberg, "An Experimental Study of the Allocation of Financial Resources Within Small, Hierarchical Task Groups," Administrative Science Quarterly, 14, No. 2 (June 1969), p. 193.

[5] The notion that authority derives from consent is suggested by Chester I. Barnard, The Functions of the Executive (Cambridge: Harvard University Press, 1938), pp. 163-165.

[6] Anton, T.J. "Roles and Symbols in the Determination of State Expenditures," Midwest Journal of Political Science, 11, No. 1 (February 1967), p. 39. The symbolic explanation is derived from Murray Edelman, The Symbolic Uses of Politics (Urbana: University of Illinois Press, 1964). Aaron Wildavsky is suspicious of such explanations, warning that "one man's symbols are another man's substance" (Private communication with the author). See also Gerald E.

Sullivan, "Incremental Budget-Making in the American States: A Test of the Anton Model," The Journal of Politics, 34, No. 2 (May 1972), pp. 639-647.

[7] At least one system-level office in Illinois has a reputation for being extremely conservative in its review of institutional requests. Institutional administrators in the system argue that they cannot compete fairly against institutions in other systems which are more lenient toward the padding of requests.

[8] Anton, "Roles and Symbols in the Determination of State Expenditures," p. 39.

[9] This classification of behavior was adapted from Robert N. Anthony, Planning and Control Systems: A Framework for Analysis (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1965), and Allen Schick, "The Road to PPB: The Stages of Budget Reform," Public Administration Review, 26, No. 4 (December 1966), pp. 243-258.

[10] Most coordinating agency staff would probably admit to playing a neutral role in the process, so that it is necessary to register opinions at all levels in order to make an accurate appraisal of the situation.

[11] LaPorte, Organizational Response to Complexity, pp. 95-96.

[12] See William H. Starbuck, "Organizational Growth and Development," in James G. March, editor, Handbook of Organizations (Chicago: Rand McNally & Company, 1965), pp. 451-533, for an elaboration of this statement.

[13] The history of coordinating agencies in Texas illustrates the precarious situation of agencies adopting "neutral" role behavior. The Texas Commission's effort to curb the growth of the former teachers colleges in the direction of graduate universities was opposed by legislators from the colleges' districts. At the same time, however, the Commission was asked by the legislature to cut institutional budgets. The Commission experienced considerable role strain and was replaced by the Coordinating Board in 1965--the Board had an expanded jurisdiction, to include the junior colleges, and had its program approval powers spelled out more clearly than did the Commission. Moreover, the Board gained the power of course approval. But when the Board attempted to stem the creation of more new institutions, especially graduate institutions, it was outmaneuvered by the University of Texas' Board of Regents. Although early in its

existence the Board threatened to exercise its powers of course control, it did not do so because, as one observer suggested: "It would have been like grabbing a dinosaur by the tail."

[14] Institutions in Texas do not always regard the Coordinating Board as an advocate. When the Coordinating Board has reduced formula study committee-proposed rates to more "saleable" levels, institutional observers have complained that the Board is "playing the role of economist rather than advocate."

(The greatest contribution to the "richness" of a formula procedure is usually made by the expanded and new program area. Although this area may not be controlled by a formula, its close relationship to the other areas of a formula-generated budget can give the formula a liberal image.)

[15] For a brief comment on the relationship between the governor and the executive director of the Board of Higher Education, see Paul Eugene Lingenfelter, "The Politics of Higher Education Appropriations in Three Midwestern States" (unpublished PhD dissertation, The University of Michigan, Ann Arbor, Michigan, 1974), pp. 108-110.

[16] Anton, T.J. The Politics of State Expenditure in Illinois. Urbana: University of Illinois Press, 1966. p. 42.

[17] Ibid., p. 93.

[18] Governor Daniel Walker, the incumbent, established a Higher Education unit within the Bureau of the Budget. In February 1974, this unit had three staff members, as compared to a total of four budget examiners for the entire Department of Finance in 1963. However, the Bureau relies heavily upon the Board of Higher Education as an analytical resource.

[19] In reviewing the Board of Higher Education budget recommendations for FY 1974-75, the Bureau of the Budget spent considerable time analyzing the cost per student across all campuses, and sought to use this information to reduce the differentials between institutions. The Bureau was trying to get more money moved between institutions (some of which experienced declining enrollments and others of which experienced increasing enrollments) and between systems of institutions.

[20] Thompson, Organizations in Action, p. 81.

[21] Occasionally a Board of Higher Education staff member briefed legislators on the formula techniques, but these orientation sessions did more to confuse the legislators with technical details than they did to promote interlevel communjcation and understanding.

[22] Rein, M. "Social Planning: The Search for Legitimacy," Journal of American Institute of Planners, 35, No. 4 (July 1969). pp. 236-238.

[23] Ibid., p. 237.

[24] A Texan observed that "formula requests are blessed because they come out of a calculator. But the funding agency at the other end has the same calculator and can reduce the amount."

[25] During periods of declining enrollments, however, the use of historical enrollment and student credit hour productivity data would work in favor of the institutions.

[26] The policy of lapsing funds in excess of those earned for actual enrollments was not suggested by the Illinois Board of Higher Education until after the 1965-67 budget requests had been submitted.

[27] For a further discussion of this point, see Aaron Wildavsky, "The Self-Evaluating Organization," Public Administration Review, 32, No. 5 (September/October 1972), pp. 509-520.

[28] Cyert, R.M. and March, J.G. A Behavioral Theory of the Firm. Englewood Cliffs, New Jersey: Prentice-Hall, 1963. p. 124.

7.

Implications for Formula Budgeting Reform

One can generalize from the patterns of behavior observed in the comparative analysis of the three cases to make an evaluation of the efficacy of budgetary formulas and some predictions about future trends in formula budgeting. One approach is to focus first on the principal analytical variables, formula structure and administrative roles, discussing the implications of the prior analysis with respect to them and then focus on the merits of formula budgeting in general. The assessment of formula budgeting can be conducted through the consideration of two questions which have strong policy overtones. First, as formula budgeting behavior varies with changing conditions, are the four functions of budgetary formulas--complexity reduction, accommodation, the setting of limits on the size of the increment of total budget, and the determination of "fair shares"--still performed? And secondly, how is budgeting with formulas dysfunctional? Answering the latter question involves isolating one aspect of budgetary formulas which underlies much of the misuse and misinterpretation of them--the role of formulas as models of organizational behavior.

FORMULA STRUCTURE AND ADMINISTRATIVE ROLES

Formula Structure

The formula concept appears headed in two possible directions. On the one hand, a formula may remain a budget-generating device, whereby through some relatively mechanical relationship, system parameters will govern the magnitude of resources to be appropriated to institutions--one might refer to this characterization as the traditional formula. On the other hand, a formula may lose its implied rigidity and become an indicator, or guideline. Unlike a formula, an indicator is not a self-justifying means of budget preparation; other factors in addition to these indicators must be used to construct and weigh budget requests. Furthermore, while an indicator is a system parameter (e.g., S/F ratio, unit cost), it does not necessarily have to be mechanically related to the resources appropriated.

The decision as to whether a formula remains a mechanical request-generating instrument or becomes an indicator (or set of indicators) rests ultimately with state-level officials. As the revenue picture becomes a larger constraint in state budgeting, most states would rather require that the institutions generate budget requests within a framework and dollar total set by the state than struggle to match excessive institutional requests with less-than-sufficient revenues. In other words, tighter revenue situations will encourage state-level actors to seek control of the budgetary process to reduce their uncertainty while at the same time shifting uncertainty to other actors. Translated into terms of formula structure, this suggests that if a formula continues to be a means for generating and justifying budget requests, either the formula rate schedules will have to be highly negotiable, or the type of data base against which the formula is applied will tend to be more projected than historical. There must be a rough balance of flexibility inherent in the formula

structure so that each level can cope with the uncertainty that it faces. The state level will want as much flexibility as possible in setting the dollar target for higher education, unconstrained by both formula rate schedules or data bases--that is, the state does not want to be obligated to fund what a relatively rigid formula might generate, for otherwise the request might exceed the available resources.

If, on the other hand, the formula is converted into an indicator, the net result is a more judgmental and flexible decisionmaking process than obtains with a more mechanical formula. Also, since most current formulas are growth-oriented (i.e., enrollment-driven), indicators allow the budgeter the opportunity to justify current budget levels on other grounds, such as quality. The state is free to establish its funding targets without being constrained by a formula to allocate more than the revenue projections call for, and the indicator does become a useful benchmark for comparisons during the budget request review stage of the process. The use of such indicators at the state level probably will be duplicated at lower levels--the system, institutional and department levels--for the same reasons that apply to the state level. No actor wants to be constrained on one side by limited resources and obligated on the other side to fund a lower level's budget request. For instance, California's Department of Finance has tended to play down the significance of the SCU/FTEF ratios, using them more as guidelines than as a tight formula framework. If this penchant continues, one can expect that the system and institutional levels, once firmly committed to the SCU/FTEF methodology as formula, will follow suit.

Prognostications about the manner of formula application--that is, a comprehensive versus incremental formula--are difficult to make in the absence of knowledge of the technical details concerning the particular base variables and coefficient data base. Budget review is made easier with an incremental

formula: In the incremental mode, increases or decreases are justified on the basis of comparisons with a current base, whereas the comprehensive approach tends to justify the entire base plus increment (or decrement) every budgetary cycle, with no attempt to distinguish between the base and increment or to relate the increment to the base. Of course, neither type of formula application comprises the total instructional budget, because there are elements--new programs and special items, for example--which require a separate nonformula justification.

The most crucial factor in determining the relative advantage to an institution of an incremental vis-a-vis a comprehensive formula is whether the instructional environment (e.g., class sizes, modes of instruction) is controlled in the comprehensive mode more by the institutional or system level--the levels which apply the formula in constructing a budget request--or by the formula itself. In the latter case the instructional environment cannot be as easily manipulated by the institutional and system levels. If the systemwide office or the institutions can readily manipulate the instructional environment in the comprehensive approach, as the California State Colleges could in applying the WTU formula, the comprehensive formula provides far more potential for slack than does the incremental approach--because the budget base is not stabilized, or fixed. If the comprehensive formula does not offer this flexibility to maneuver, one cannot assert in the abstract that one mode provides the potential for more slack than another.

Formula budgeting behavior depends as much on the state-level and coordinating agency-level roles over the long run as it does on formula structure. Although the interplay between the roles of the two levels is difficult to predict in the absence of a specific policy environment, several observations can be made about the trends in roles at each level.

Administrative Roles

The controller role seems particularly attuned to a growth era in higher education during which resources are readily available and higher education is a high spending priority, so that the state level is not overly concerned with overall expenditure totals or patterns. A condition of surplus resources combined with a high social priority offers less incentive for constraining the expenditure total than does a tight fiscal condition during which the function in question has a lower priority. When resources are not scarce, relatively speaking, there is more attention paid to details than to totals--the budget becomes a framework for the control of expenditures. Moreover, rapid growth frequently results in uncontrollable totals--to reduce their uncertainty, actors seek to control the particulars. The controller's underlying premise is that the total, or sum of the parts, will be restrained by controlling the parts. One would guess from the historical case data that the controller mode will be more obsolete--or if not obsolete, at least extremely inefficient and unnecessary--when resources are scarce and higher education has a lower spending priority and that the managerial mode will be more common. Why does this prediction seem reasonable? When resources are insufficient to meet demands, it becomes easier to control expenditure totals because there just is not the money to spend. There is considerable work involved in reconciling both totals and details. Also, funding agencies cannot afford the luxury of spending time working out the details of programs that will not materialize. More importantly, the reward for funding agencies is geared more toward managing the totals. Finally, a controller would in a sense be unnecessarily incurring some of the political costs, and hence uncertainty, by making decisions about the lower level's activities--especially when these decisions could be made at the lower levels anyway.[1]

The institutional and state-level advocate roles both seem to be likely counterparts at the coordinating agency level to the dominant managerial role

at the state level. The underlying premise of the institutional advocate role, as exemplified by the Illinois Board of Higher Education under Cameron West's directorship, is that the institutions of higher education need to have their true deficiencies forcefully publicized in times of budgetary retrenchment. In that regard, state-level agencies must be sensitized to the fact that institutions cannot be cut back at the same rate that enrollments level or decline without endangering key areas of the institutional budget. This sensitization is especially crucial in light of the increased state-level attention to and manipulation of the interrelationships among major program areas in the higher education budget. The alternative to the institutional advocate role, on the other hand, is the state-level advocate role. As state-level agencies become more involved in programmatic decision making, they will need an agency to monitor the institutions to insure that state-level policies are enforced. Difficult choices have to be made with respect to the establishment of statewide priorities for program review and resource reallocation. Because it is not easy to generate institutional support for such tough decisions, the most likely power base for the coordinating agency is the source of the resources to be allocated--the state-level funding agencies.

As the resource situation becomes tighter, the initiative for action--and hence the locus of control--tends to shift from the coordinating agency level to the institutional level. During periods of growth coordinating agencies have clout through the allocation of money for new programs. Under tight resource conditions the funds for new programs tend to come from internal reallocation, making the institutional level less dependent on the coordinating agency level in some respects and consequently less cooperative. (Internally, institutional administrators use the coordinating agency as a foil when justifying decisions to the faculty.) Unless coordinating agencies in general can improve their power base through program review and long-range planning, the only viable coordinating agency of the immediate future will be the consolidated governing board.

Such a board can play the institutional advocacy role as far as possible; once the resources are appropriated, however, the board has the power to effect the necessary cutbacks and reallocations.

If the forecast of the trend toward less rigid types of formulas--formulas with negotiated rate schedules or projected data bases, or even indicators--and managerial roles is reasonably accurate, what can be said about the functions traditionally performed by budgetary formulas? Will they still be performed and how? Finally, to complement the discussion on the positive aspects of formulas, the question is raised: What are the dysfunctions of formula budgeting?

THE FUNCTIONS AND DYSFUNCTIONS OF FORMULA BUDGETING

Functions

The degree to which the traditional functions attributed to formula budgeting--complexity reduction, accommodation, establishment of limits on the size of the increment or total budget, and determination of fair shares--are performed in the future depends largely on the rate of growth of institutional budgets. The crucial question becomes, How large is the increment? It is granted that all budgeting is "incremental" in the macro sense--yet when is an increment no longer an increment, but a significant increase? (The same questions apply to decrements.) It can be argued that in the recent past, during higher education's Golden Era, budget "increments" represented significant increases (even on a per-FTE-student basis in some cases) and that budgeters depended on budgetary formulas to perform the above-mentioned functions. Budgetary formulas put significant increases into a framework that treated the increases as if they were minor changes in the budget base, to be handled in traditional incremental fashion. As enrollments level, however, and the budget increments

become considerably smaller, the functions once performed by formulas will be performed instead by traditional incremental budgeting--marginal adjustments in the status quo. If enrollments decline rapidly, or if states have campuses with significant differences in the rate of decline, budgetary formulas--different from those used in the budget growth era--will be called into service.

Assume that most states will experience leveling or gently declining enrollments in the near future. If budgets remain roughly proportional to enrollments, as they have been in the past, the budget increments or decrements will be small indeed. Furthermore, increments to the previous cycle's budget will consist largely of non-formula items--new or expanded programs and special items. It is reasonable to assume that in states or institutions facing gradually declining enrollments, requests for such nonformula items will be granted only under the condition that the institution provides its own funding through reallocation of resources in the budget base. Thus, under the conditions of a very slowly changing budget, accommodation and the determination of fair shares are accomplished through very small adjustments in each operating unit's budget base. The participant's confidence in budgetary formulas, which during periods of rapid budget growth rested partially on a symbolic interpretation of equity--as evidenced by "objective" data, a common framework for allocations and open procedures--will be replaced by a confidence in equally stabilized budgets.

Moreover, last year's budget will more closely represent the size of this year's budget in times of scarce resources than during a growth era. A budgetary formula reduces conflict in part because it assumes the role of surrogate "cutter." Without question, few institutions would ever ask for less than what the formula generated. Thus, the formula sets a budget floor and a ceiling in much the same fashion as the 125 percent target employed in the Japanese national budgetary model.[2] The budget ceiling is set in a very impersonal manner; consequently, the formula reduces considerably the need for an active cutter agency. With the

less aggressive cutter role there tends to be more harmony between the requestors and the funders. However, the pattern of expectations established by formulas--expectations concerning the ceilings on budget requests--will be governed greatly by the budget base during a period of static or slightly declining budgets. Under those conditions, formulas or indicators will continue to be important aids to calculation, or complexity-reducing devices, useful in establishing historical patterns of system parameters, yet they will not be as important as the status quo in determining the size of budget requests.

If enrollments decline rapidly on a statewide basis, or even differentially among institutions, it seems likely that budgetary formulas would become popular as instruments for budget generation and justification, for the same reasons that hold for their use in times of rapid budget growth. Budgetary formulas used on the downward side, however, will have to be grounded on different data bases than formulas used on the upward side. Growth formulas have tended to be based on system averages, such as costs, which favor institutions because the cost of servicing additional students tends to be marginal. If average costs were used as the basis for budget reductions, when cost decreases are actually only marginal, an institution would suffer an unreasonable debilitation of its "critical mass." This relaxation could lead to a reduction of program effectiveness by forcing the elimination of crucial program components. With the tendency toward the managerial role at the state level, one would expect the manager's concern for program performance, unit costs, and budget totals to be manifest in the development of new formulas based on marginal cost differences.

The utility of "formula" decision rules, at least with regard to the performance of certain functions, appears to be cyclic. As a state's system of higher education (or parts thereof) encounters significant increases or declines in enrollment with concomitant budgetary fluctuations, there will be a greater dependency on budgetary formulas for the acquisition and allocation of resources.

increments or decrements which represent significant changes in the budget base carry with them uncertainty as to how the difference should be distributed. Budgetary formulas fill the breach as uncertainty-reducing expedients. During more stable, or steady-state times, the functions attributed to formula budgeting will be performed more by incremental budgeting as described by Barber, Fenno, and Wildavsky, including the use of indicators, than by more mechanical budgetary formulas.[3] It is extremely difficult to develop a consistent decision rule which treats some institutions which have increasing enrollments and others suffering leveling and declining enrollments in an equitable manner.

Dysfunctions

Thus far the discussion has focused on the four primary functions performed by budgetary formulas. Given the fact that formula budgeting will exist in higher education, in one form or another, for some time to come, and guided by the principle of symmetry, one might ask what dysfunctions stem from the application of budgetary formulas. The breakdowns originate from the misunderstanding and misuse of budgetary formulas as much as from any inherent defects in the technical aspects themselves. Although there are undoubtedly several dysfunctions, this next section will concentrate on the potential weaknesses in using formulas as models of organizational behavior.

A budgetary formula provides a twisted image of organizational reality. Why is this so? In essence, a formula is a theory of behavior. As such it compacts a great deal of knowledge by reducing the amount of information to be handled. And as is the case with most theories in the social sciences, the loss of information leads to considerable distortion. The categories adopted for the allocation of faculty workload, for example, are in a sense artificial. It is difficult to categorize in a concise fashion all the activities engaged in by faculty members. Thus, those activities which are included in the formula must

also cover those which are not. A formula is therefore little more than an agreed-upon set of conventions for the categorization of activities which require resources. The agreement may be between requesting agencies or between both requesting agencies and funding agencies; the intended use of the formula, as presented here, is as a means to acquire resources (from the institutional perspective) and allocate resources (from the state perspective).

Some excellent insights into the limitations of the formula as a model can be obtained by examining the distinction between costing and pricing.[4] As previously mentioned, most budgetary formulas are intended primarily as resource acquisition devices. As such they could be viewed as pricing mechanisms--formulas generate budget requests which are really prices the state is charged to support the educational services. Formula-generated requests are frequently negotiated when they are reviewed at the state-level, and the negotiated amount is more accurately a price the state is willing to pay for the educational services than a true representation of the actual costs involved in the educational enterprise. The use of actual cost data appears to be more closely associated with the allocation of appropriated funds to the operating unit level. Part of the confusion over the distinction between costing and pricing stems from a natural dilemma which in a sense is the linkage between the two concepts.

A number of state systems are tending to move toward increasingly refined cost-accounting systems in order to establish more realistic pictures of the true cost patterns within the educational systems. These costing techniques contribute data that are being used as the basis of budgetary formulas. Actual costs are used, naturally, to give the requestors some idea of how much to request from the state. In this sense, cost data are used as an aid to calculation in the budget request phase of the budgetary process. Secondly, and equally important, the cost data included in the budgetary formulas provide a built-in justification

(in the minds of reviewing agencies) for the requested amount. In other words, because the formula-generated request is closely based upon actual cost experience, the request is more believable at higher levels. The dilemma which arises in distinguishing between costing and pricing is evident in the use of the cost data to establish a price.

The problem is that prices are based upon an aggregation of costs; aggregation tends to preclude the details, so that the direct link to costs is obscured. That is, prices are based upon costs, but because costs are complex and uncertain, the judgment that prevails is difficult to distinguish from error attributable to honest uncertainty. For example, the more abstract "opportunity costs" and "costs to maintain a certain level of prestige" among a state's or system's set (i.e., group of systems or states with which the focal state or system compares itself) are not explicitly displayed. Yet, these more qualitative factors do manage to be considered in the determination of prices--legislators are interested in how their state compares with others with respect to per capita expenditures for higher education; campus and system-level administrators justify their faculty salary levels by pointing to salaries at institutions of "comparable quality;" and sometimes qualitative factors are incorporated into the formula itself, with periodic updating of the data elements to bring the prices more in line with those charged in comparable systems. In summary, costs are ill-defined because what may be viewed as slack or an unnecessary expense may represent only a qualitative difference. Is one more faculty member, for example, a "legitimate" cost or merely price-padding? Most states arrive at some notion of price after a process involving the aggregation of "cost" data and negotiations over this data. Thus, a formula which establishes a final price based on aggregated cost data may still have unsteady underpinnings; the issue concerns when is cost a necessity and when is it padding.

This discussion of the difference between costing and pricing illustrates the problem of treating the formula as a costing device--and one that mirrors

organizational reality, at that. The question often arises in the minds of state legislators: Why are the institutions not spending their appropriated resources as originally proposed in the budget requests? The problem is the matching of expenditures with the original request (i.e., the categorization or proposed pattern of expenditures as embodied in the formula). What the campus and system levels require is an information/accounting system which will monitor the actual expenditure pattern and "back" these categories into the categories used in the formula to reflect the budget request. Such a crossover is essential if the campus and system levels ever hope to satisfy legislative and budget office doubters about the discontinuity between proposed (i.e., formula) and actual expenditures. But this practice would undoubtedly limit institutional flexibility and slack because it provides a basis for more state-level programmatic or functional control. Moreover, formulas become too complex if they incorporate too great a level of cost differences. The coefficients would have to be different for each course, at each level in each institution, to capture all of the unique cost factors. Although a formula may be based on actual cost data and may even be used to allocate appropriated resources, it nonetheless represents certain agreed-upon conventions for the attribution of indirect costs to some of the categories included in the formula.

The trend toward more flexible decision rules such as indicators or performance measures must be accompanied by c greater understanding of the difference between an accounting system and a system which measures performance, or uses performance as the basis for the allocation of resources. Basically, the two concepts are not comparable. Accounting systems register the results of activity for a discrete period, forming an historical record, whereas performance measurements are samplings of the process "pulse" at any one point in time. The issue is one of the currency of information used upon which to base resource allocation decisions.

A final warning must be made concerning a potential misuse of budgetary formulas. Too many administrators at all levels fall prey to the expediency of using a formula as an avenue to attack another actor's (real or perceived) slack. A formula seems to be tailor-made for judgments as to what is "fat" or what is "muscle," yet such formula-assisted decisions can be fraught with negative consequences unless the slack-cutter realizes the limitations of the formula as an image of reality. Slack as it exists in the organization may not necessarily be what it appears in the formula. Thus, the cutter may be disappointed that the actions taken to reduce slack may not have the intended results. As noted earlier, the formula represents an aggregation of costs, many of which carry the considerable burden of qualitative judgments. The formula is a poor means to resolve differences in values, especially when these differences are obscured in the aggregation process. On the other hand, the actor whose perceived slack is being cut must have some flexibility to allocate the reduction where most appropriate--the formula is a distorted lens for one level to view another, and administrators at the operational level should have some latitude in making corrective adjustments.

I have sought to translate some of the traditional concerns of the public policymaker--autonomy versus subordination, conflict versus cooperation, flexibility versus control--into the language of administrative roles, decision rule structure, and political and economic climate, using budgetary formulas as a lens to examine a broad range of organizational and budgetary behavior. The omnipresent force behind this behavior is the need to reduce uncertainty, especially uncertainty caused by rapid changes in the everyday routines of organizational life. Actors in the budgetary process, I have shown, resist sudden changes in environments which have been negotiated through the expenditure of a great deal of time and effort. As Kaufman notes: "Why gamble an established imperfect order for possible disorder? The logic of collective life thus has a conservative thrust; it lends authority to the system as it stands."[5] One of the

many organizational dilemmas that formula budgeting points up is the tension between the need for stability and the natural tendency toward rigidity. As the environment of higher education changes, budgetary formulas and administrative roles will have to change to avoid becoming rigid, because the natural consequence of rigid routines in a changing environment is greater uncertainty. Yet the words of the Declaration of Independence offer no small comfort:

> All experience hath shown that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed.

FOOTNOTES

Chapter 7

[1] On the other hand, the pressure on lower levels to pass difficult decisions upward may be even harder to resist.

[2] See John Creighton Campbell, "Japanese Balanced Budgeting," paper prepared for the Research Conference on Japanese Organization and Decision-Making, Sheraton-Maui Hotel, Hawaii, January 5-10, 1973, for a discussion of the 125 percent budget ceiling.

[3] See the chapter "Budgeting: Who Gets What and Why," in James D. Barber, Power in Committees: An Experiment in the Governmental Process (Chicago: Rand McNaily, 1966); Richard F. Fenno, Jr., The Power of the Purse: Appropriations Politics in Congress (Boston: Little, Brown and Company, 1966); Aaron Wildavsky, The Politics of the Budgetary Process (Boston: Little, Brown and Company, 1964).

[4] Many points in this section evolved from discussions with Ralph Purves and Frank Schmidtlein of the Center for Research and Development in Higher Education, University of California, Berkeley.

[5] Kaufman, H. The Limits of Organizational Change. University, Alabama: University of Alabama Press, 1971. p. 10.

Appendix A:
The Technical Evolution of Instructional Formulas in California: Some Highlights

THE CHANDLER FORMULA

Chandler's unrefined formula for the number of faculty to be budgeted at each college was:

$$\text{Number of Faculty} = \frac{C + V + A}{W}$$

where C was the course offerings (the total value in units of the approved courses); V, the total value in units of the additional sections (beyond the first section); A, the instructional administrative work; and W, the average amount of work one faculty member performed (in units).

THE WEIGHTED TEACHING UNIT (WTU) FACULTY STAFFING FORMULA

The approved formula is presented in Table A-1. Application of the formula, though time-consuming, was straightforward. The individual college submitted an annual course section report to the Department of Education; this report projected enrollments for each class taught in the institution. Each class had

a fixed size limitation, depending upon the discipline and the mode of instruction; if a course enrollment exceeded the limitation, at least one section (class) was guaranteed, while if the course enrollment exceeded the class size plus a fixed increment (the total of which was called the breaking point), a second section was started. If the course enrollment exceeded the class size limitation but was less than the breaking point, only one class was scheduled and the left-over students were denied admission to the course for that term.

The faculty work week standard was 45 hours, composed of 12 units of classroom teaching and 24 hours of preparation, grading papers, etc. (or variation on this 12-24 ratio because of a different mode of instruction), plus nine hours of advising, committee work, etc. The variations of the 12-24 ratio were accounted for by K-factors: The K-factor was 1.0 for classes meeting one hour for one unit of credit; the facror was 1.3 for classes meeting two hours for one unit of credit, and so forth. Faculty performing supervisory work received 12 teaching units credit for every 25 or 36 students served, depending on the type of supervision. The total faculty staffing requirement was determined by summing the number of classes offered multiplied by the credit value of each class and dividing this total by 12 (which represented the number of weighted teaching units, or WTU's, in a full-time equivalent faculty member's load).

Only courses in curricula approved by the State Board of Education could be included in the formula. The staffing formula was originally intended as a device for determining the overall instructional staff budget for each institution. The actual allocation of faculty positions internally was left to the discretion of the president or his administrators. Consequently, the number of course sections specified by the WTU staffing formula did not necessarily have to coincide with the number of sections actually scheduled.

This discretion for the internal allocation of positions yielded a high potential for budget padding which had not gone unnoticed during the formula trial runs in 1952:

Table A-1

California State Colleges' Report of Deans of Instruction
on Faculty Staffing Formula
April 16, 1952

Formula: $$N = \frac{(C_a + V_a) + (C_b + V_b)1.3 + (C_c + V_c)1.5}{12} + \frac{(C_d + V_d)6 + (C_e + V_e)3 + S}{12}$$

N = Total number of faculty
C = Approved courses (see below for a, b, c, d, e)
V = Additional sections of approved courses
S = Allowance for supervisory staff
12 = Faculty work load in units

All calculations based on work week of 45 hours:
12 units teaching
24 hours preparation, grading papers, etc. or
variations on above because of different type teaching.
9 hours advising, committee work, etc.

C_a: Classes meeting one hour for one unit of credit
C_1 = straight lecture: unlimited except by physical facilities available or scheduling necessities; V-add sections
C_2 = lecture-discussion: limit 40; breaking point 50; V_2
C_3 = lecture-composition:) lecture-counseling:) limit 30; breaking point 35; V_3
C_4 = composition, foreign languages, math: limit 25; breaking point 30; V_4
C_5 = senior or graduate seminars: limit 20; breaking point 25; V_5

C_b: Classes meeting two hours per one unit of credit: K = 1.3
C_6 = art activity: limit 24 or physical facilities; V_6

Table A-1
Continued

C_7 = education workshop: limit 30; breaking point 35; V_7

C_8 = music activity-large group: limit 40; breaking point 50; V_8

C_9 = instructional or vocal instruction: limit 10; breaking point 12; V_9

C_{10} = physical education and recreation activity: limit 30; breaking point 40; V_{10}

C_{11} = speech and drama activity: limit 20; breaking point 25; V_{11}

C_{12} = business (machines, etc.); home economics and industrial arts: limit--physical facilities or scheduling necessities; V_{12}

C_c: Classes meeting three hours per unit of credit. K = 1.5

C_{13} Science laboratories)
Home Economics ")
Ind. Arts ")
Agriculture ") Limit: physical facilities; V_{13}
Engineering ")
Wild Life Mgmt. ")
Business ")
Etc. ")

C_d: Classes meeting more than three hours for one unit of credit; K-factor = 6

C_{14} = Coaching-major sports (football, basketball, baseball, track): limit. 20

C_e: Classes meeting more than three hours for one unit of credit; K-factor = 3

C_{15} = Coaching-minor sports (swimming, tennis, gymnastics, wrestling): limit: 20

C_{16} = Play production: limit: 20

S: Allowance for supervisory staff

Supervision of directed teaching: ratio 1:25
Supervision of Field Work)
Work-study) ratio 1:36
Project supervision)
Masters thesis and projects)

> One word of warning--if you do use for budget purposes a C-2 classification and yet use C-1 method of teaching, do not ask for extra sections except as actually needed. It could be of course that this as well as other ideas are ways in which faculty needs could be padded. The group meeting here was aware of this possibility and could only say that the only answer is to trust the honesty and integrity of the group concerned.[1]

The use of the formulas in the 1960's demonstrated how this trust was misplaced.

ACCEPTANCE OF THE WTU STAFFING FORMULA

By the beginning of FY 1953-54, the Department of Finance had accepted the formula content with some minor complaints. And in practice, the first official application of the formula did not break the state treasury. For 1953-54 the formula called for 142.5 additional teachers, or 31.4 more than would have been provided under the S/F ratio method. Not all campuses received increases, as noted in Table A-2. The big difference between the budgets generated by the S/F ratio method and those generated by the staffing formula was that the latter were approved as submitted, without bickering, in the first two years of formula use.

Table A-2

Comparison of WTU Formula Methodology with S/F Ratio Procedure for FY 1953-54 Data[2]

	S/F Ratios	Teachers Added per Ratios	Teachers Added per Formula	Increase Over Ratio
Chico State	Minimum courses	3.2	11.3	8.1
Fresno State	18.1	8.3	13.4	5.1
Humboldt State	Minimum courses	3.0	10.0	7.0
Long Beach State	15.1	10.4	15.0	4.6
Los Angeles State	16.1	18.9	11.0	-7.9
Sacramento State	15.1	15.2	15.1	-0.1
San Diego State	19.1	18.7	14.1	-4.6
San Francisco State	19.1	8.4	14.9	6.5
San Jose State	19.1	25.0	37.7	12.7

THE STUDENT CREDIT UNIT PER FULL-TIME EQUIVALENT FACULTY (SCU/FTEF) METHODOLOGY

The budgetary cycle for FY 1973-74 marked the introduction of what was intended to be a one-year experimental faculty staffing procedure for the state colleges. The new approach used the experience of the past three years (1969-1972) with student credit units (SCU) per full-time equivalent faculty position (FTEF) to generate a SCU/FTEF ratio, disaggregated by institution and instructional discipline categories. Systemwide calculated the three-year average fall term SCU/FTEF ratio for each institution for 25 discipline categories. Each institution projected the annual average SCU productivity by level of instruction and discipline category for the 1973-74 academic year. The sum of discipline category SCU divided by 15 (i.e., one FTE student takes 15 SCU) had to equal the 1973-74 annual average FTE student (FTES) projection for the institution as a whole, which was determined through previous negotiations with the Systemwide staff.

The institution staff divided either the three-year average fall term discipline category SCU/FTEF ratio, or an adjusted SCU/FTEF ratio, into the projected discipline category SCU to determine faculty requirements in each discipline category. Where an institution felt that the use of the fall term three-year average ratio as divisor was incongruent with its academic needs that year, it amended the discrepancy by proposing a ratio change. The institution had to complete a set of ratio change proposal forms to justify each proposed adjustment in discipline category SCU/FTEF from the three-year average. Proposed adjustments in ratios could be justified on the grounds of anticipated curricular changes (e.g., the introduction of new programs or modes of instruction; the introduction of education technologies; program maturation; anticipated changes in student mix) or on the grounds that the technical methodology of ratio generation handicapped the institution in some way (e.g., some campuses preferred the use of an annual average rather than the fall average because the former gave a more favorable picture of the institution's resource needs). The program change proposals were negotiated by Systemwide staff and institutional representatives.

Because the number of faculty positions generated by this procedure represented only those which were actually to be paid from "Instructional Program" funds, each institutional request was increased by two percent after all negotiations had been completed to compensate for the mandatory faculty salary savings target of two percent.

Systemwide was convinced that the Department of Finance would accept the methodology because it was based upon a productivity measure--student credit units. Systemwide like the SCU/FTEF ratio method because it could be sold to both the institutions and the Department of Finance; the institutions favored the method somewhat because it tended to lower the S/F ratio slightly.

This decrease resulted from the historical data used in generating the ratio. Several years earlier the SCU/FTEF ratio had been richer--these "good" years tended to reduce the current S/F and SCU/FTEF ratios when included in the three-year average.

THE SCU/FTEF FORMULA AND THE BUDGETARY PROCESS

The state college operating budget was divided into three principal categories: the baseline budget, program maintenance proposals, and program change proposals. The baseline budget was a no-growth budget; it essentially started with the previous year's appropriations and added baseline adjustments such as inflation factors and merit salary increases. The program maintenance proposals (PMPs) were routine provisions for growth. For example, in those parts of the operating budget still controlled by formulas, the projected enrollment increases were applied in the formula to generate requests to compensate for enrollment growth. Finally, the program change proposals (PCPs) were requests for new or expanded programs to meet other than growth needs. Each institution negotiated with the Systemwide staff over the PMPs and PCPs. Although the baseline budget and PMPs were approved rather routinely by Systemwide, PCPs required a major justification.

Systemwide, in turn, had to negotiate with the Department of Finance for the system package of PMPs and PCPs. In its review of the FY 1973-74 budget requests, Finance apparently lumped the baseline budget request and the PMP request together. The governor's budget for FY 1973-74 authorized 396.3 additional FTE faculty positions over FY 1972-73 to cover an expected enrollment increase of 5,120 FTE students. This increase represented a continuation of the 1972-73 budget S/F ratio of 17.9:1 implemented by the legislature and approved by the governor, and an augmentation of 75.3 additional faculty positions with clerical support.[3] It should be noted that the state colleges as a

system were budgeted on the basis of a system average SCU/FTEF ratio, which was negotiated by Systemwide and the Department of Finance. Table A-3 shows the past and proposed S/F ratios and the comparable SCU/FTEF ratios.

Table A-3

Budgeted and Actual S/F Ratios and SCU/FTEF Ratios for California State University and Colleges as a System[4]

Fiscal Year	S/F Ratio		SCU/FTEF Ratio
	Budgeted	Actual	
1967-68	16.27	17.21	246
1968-69	16.10	17.35	243
1969-70	15.92	16.67	240
1970-71	16.36	17.34	244
1971-72	18.27	17.91	274
1972-73	17.94	--	269 (est.)
1973-74	17.82	--	267 (est.)

The productivity target of 267 SCU/FTEF was still very closely linked with the 12 WTU workload norm of the old staffing formula, as indicated by comments in the governor's budget for FY 1973-74:

> This productivity goal, based on the ratio of average full-time equivalent faculty to student credit units earned, will be generated from an average faculty workload exceeding 12 units per term, including units earned in independent study instruction. A key instructional factor influencing productivity is faculty teaching effort, measured in weighted teaching units (WTU) which are approximately equal to average faculty instructional contact hours with students.[5]

Thus, the elements of the old WTU faculty staffing formula were still very much alive in the new SCU/FTEF ratio approach.

The Legislative Analyst's staff recommended that the legislature fund the governor's budget for state college faculty positions. The staff reasoned that the

colleges could not adequately justify any additional staff, especially since the colleges received a legislative augmentation of 176.7 faculty positions the previous fiscal year. The Legislative Analyst's staff became more receptive to the Department of Finance's budgeting methodology because the governor's budget reduction of faculty positions in FY 1971-72 had not been as damaging as it might have been since enrollments began to drop that year. The FY 1971-72 budget had been based upon a projection of 221,020 FTE students, but only 211,365 FTE materialized. When the FY 1973-74 budget was reviewed, the enrollment for 1972-73 was estimated to be 223,210 FTE instead of the budgeted 228,170 FTE.[6] In the state colleges the growth in total enrollments continues, but this growth is clouded by a recent trend towards part-time status--the increase in part-timers tends to reduce the total FTE count.

The Analyst's staff also proposed that 252 of the 369.3 new positions be selectively allocated by the Systemwide staff to reduce the pressure of "impacted" programs.[7] Systemwide asked the campuses to identify areas where the additional positions could be used to the best advantage; because this was done very late in the summer of 1973, the allocation of these positions was not a complete success. Some of the positions were used to meet the faculty salary savings target; others were granted to certain campuses that faced unexpected pressures immediately prior to registration time. Although some analytical techniques and decision parameters such as student mix and institutional type were employed, the allocation decisions were largely subjective--decided often by who cried the loudest. Frequently it was the small institution, without the advantages of economies of scale, which received the positions.

THE SCU/FTEF METHODOLOGY IN FY 1974-75

Apparently Systemwide was sufficiently satisfied with the results of the FY 1973-74 budget review process to employ the SCU/FTEF methodology again

during the FY 1974-75 budget cycle. The procedure was essentially the same as that used for FY 1973-74 with two modifications:

1. The effect of changing enrollment patterns on the campus S/F ratio was isolated from the effect of staffing ratio changes in particular disciplines.

2. The change proposal method emphasized the number of faculty who were needed to provide adequate support for particular instructional programs rather than the change in ratio that would generate these faculty.[8]

Both changes were modifications in the accounting system used to compute the SCU/FTEF ratios more than they were substantive alternations. Systemwide attempted to help the campuses solve the problems created by the recent shift of students from low-cost programs to high-cost professional programs--the problem at campuses such as Hayward, Fresno, and Pomona was (and is) that they are not growing and cannot abosrb the student shifts within the context of a small faculty. The procedures used to generate the FY 1974-75 institutional budget requests were intended to highlight this problem and hopefully justify a Systemwide request for additional faculty positions to provide relief for the needy campuses.

On a systemwide basis the additional calculation used to isolate student shifts accounted for 56 additional faculty positions. Following preliminary reviews of the Systemwide budget request, a representative of the Department of Finance indicated that the chances for approval of the request for the extra 56 positions were poor.

There exist two glaring weaknesses in the new SCU/FTEF methodology. First, the SCU/FTEF ratio is not a decision factor in Department of Finance reviews of the Systemwide budget requests. Observers note that the productivity ratio is more a reflection of the outcome of a Department of Finance decision than a factor in making the original decision. Although Finance feels that the

SCU/FTEF ratio can be readily converted into the S/F ratio. It is actually the S/F ratio which guides the Department of Finance in making its recommendations on instructional funding.

Secondly, the SCU/FTEF methodology has as its foundation the old WTU staffing formula. The system workload norm continues to be 12 WTU; the weighted teaching units are still determined by K-factors, C-classifications for the various modes of instruction, and the independent study supervisory classifications. Although the more recent application of the basic formula structure no longer makes use of the "breaking point" concept for class sizes, each mode of instruction still has a "normal limit" recommended. And while the state university and college system is budgeted on the basis of an average SCU/FTEF ratio, the institutions must continue to generate their institutional budget requests with a new productivity-oriented methodology severely constrained by the old formula structure.

FOOTNOTES

Appendix A

[1] California State Department of Education, Division of State Colleges and Teacher Education, Memorandum. TO: Deans of Instruction; FROM: James B. Enochs; SUBJECT: Classification of Courses for Faculty Staffing Formula; July 10, 1952.

[2] State of California, Budget for the Fiscal Year July 1, 1953 to June 30, 1954 (Submitted by Earl Warren, Governor, to the California Legislature, 1953 Regular Session), p. 267.

[3] Legislative Analyst's Report for FY 1973-74, p. 808.

[4] Ibid., pp. 808, 810.

[5] State of California, Budget Supplement for Health and Welfare and Education for 1973-74. Volume II of the 1973-74 Budget Document (Submitted by Ronald Reagan, Governor, to the California Legislature, 1973 Regular Session), p. 938.

[6] Legislative Analyst's Report for 1973-74, p. 800.

[7] Ibid., pp. 810-811. An impacted program is one that has an excessive enrollment for the faculty resources available.

These positions were also intended for programs that came in "late in the game" and did not have the historical background (i.e., a three-year average) to generate their real needs. In addition, the positions were to be used to compensate for student shifts from low-cost to high-cost programs.

[8] California State University and Colleges, "Faculty Staffing Instructions, 1974-75 Budget," p. 1.

Appendix B:
The Technical Evolution of Instructional Formulas in Illinois: Some Highlights

1963-65 BIENNIUM

The formula used by both the University of Illinois and Southern Illinois University for the 1963-65 biennium to provide for increased enrollments is outlined in Table B-1. The four Teachers College Board institutions employed a considerably leaner formula, presented in Table B-2.

Table B-1

Staffing Formula to Provide for Increased Enrollments--
University of Illinois and Southern Illinois University, 1963-65 Biennium[1]

Level of Student	S/F Ratio	Average Salary	Per Student Direct Salary	Indirect Cost (75% of Direct Salary)	Per Student Total
Lower Division	15:1	$ 8,000	$ 533	$ 400	$ 933
Upper Division	12:1	9,000	750	563	1,313
Graduate	7:1	10,000	1,429	1,071	2,500

Table B-2

Staffing Formula to Provide for Increased Enrollments--
Teachers College Board Institutions, 1963-65 Biennium[2]

Level of Student	S/F Ratio	Average Salary	Per Student Direct Salary	Indirect Costs *	Per Student Total
All	16.67:1	$8,500	$510	$150	$660

* $2,500 per faculty position

1967-69 BIENNIUM

The 1967-69 budget request was divided into nine major categories: Instruction less Physical Plant, Operating Costs of New Buildings, Organized Research, Extension and Public Service, Laboratory Schools, New Programs, Price Increases, Salary Adjustments, and Biennial Overlap.[3] Formulas applicable to the instructional function were used for Instruction less Physical Plant, Salary Adjustments (for academic instructional staff), and New Programs. Although these formulas are grounded in technical details, it is worth summarizing the salient features.

Instruction Less Physical Plant

The three components of this portion of the operating budget request were the base, the increment to the base to cover additional costs due to added enrollments, and a "catch-up" adjustment awarded to institutions found deficient in their funding base when compared to a theoretically adequate base.[4] The base was the state appropriation for 1965-67. The increment to the base was calculated in several steps. First, the student credit hour production by level was

projected for 1966-67, 1967-68, and 1968-69. Next, the increase in production for 1967-68 and 1968-69 over that for 1966-67 was calculated. The estimated total increase in production multiplied by the institution's weighted average cost from the 1964-65 cost study equaled the additional resources required to handle the increased student load during the 1967-69 biennium. The final factor, a "catch-up" adjustment, was a means to enrich the bases of lower-cost institutions to bring them closer to the statewide average. A final adjustment was made, if necessary, for underenrollment in the 1965-67 biennium. The amount of money to be lapsed (or the negative adjustment in the 1967-69 request) would be the total projected enrollment during 1965-67 multiplied by the budgetary formula less the total actual enrollment for the same biennium times the budgetary formula, less three percent of the projected enrollment times the formula. No adjustments were made for overenrollments; institutions were expected to absorb these out of their own slack resources.

Salary Increases

Salary increases were calculated separately for academic and nonacademic employees according to a modified version of the formula used for the 1965-67 biennium. The formula concept was to provide an average step increase for all staff and to provide additional resources for merit increases. For the academic side, the general increase factor was 3.2 percent of the academic salary base, which included all faculty, graduate assistants, and administrative staff not on Civil Service. The merit increases were based on 1966-67 projected annual credit hour production as follows: $200 for each 540 lower-division student credit hours, $320 for each 360 upper-division student credit hours, $510 for each 270 Graduate I student credit hours, and $690 for each 120 Graduate II student credit hours.[4] The separation of academic salary increases into two components was partly a public relations ploy to appease legislators concerned with increased productivity. Merit increases were calculated on the basis of increased student

credit hour production. The basis for justifying salary increases was not as sound as that for resources to meet enrollment increases, as Layzell notes:

> The formula items for salary increases were not a product of divine revelation nor were they precisely the amounts needed on a purely mathematical basis. Like the other formula items, they were the products of calculation, negotiation, and compromise. They were rational in the sense that they bore a fairly identifiable relationship to calculated needs but they were the products of negotiation and compromise in the sense that they were less than calculated needs in order that they might better [be] 'sold' to the Governor and General Assembly.[5]

New Programs

The Budget Formula Committee introduced the new-program formula in the 1967-69 budgetary process to ease some of the pressures on the IBHE staff for uniform program review. Under the new guidelines, requests for new programs would be honored under the condition that the programs themselves were approved at a later date. Typically, the IBHE staff cleared all but PhD programs in two months or less; PhD program approval took longer because a commission of scholars reviewed the program proposals. In all but two circumstances, new-program requests were considered fully funded under the increased enrollment formula. One circumstance was an institution's wish to improve an existing program (i.e., offer an existing program at a higher funding level); the second was a situation in which the increased-enrollment formula generated insufficient resources for the new program. The second exception was expected to occur most frequently as institutions planned to initiate graduate programs.[6]

The new-program formula did not work as well as the other formulas because of different circumstances on different campuses. Each new program had, for example, differing starting points and different enrollments in the supporting disciplines. (One observer described the new-program formula as as a "Rube

Goldberg invention.") Moreover, there was sometimes a problem in distinguishing between special requests--usually nonrecurring expenditures, which were not handled by formulas--and new programs. Yet the new-program formula approach was a first step toward the coupling of program review with budget review.

1969-71 BIENNIUM

The budget instructions for 1969-71 included 10 categories of increases: Adjustments in the Base Budget, Statutory Increases, Salary Adjustments, Increased Enrollments, Operating Cost of New Buildings, Price Increases, Refunds, New Programs, Program Improvement and Expansion, and Other Specific Items.[7] The Adjustments to the Base Budget category contained four adjustments: the calculation of the biennial overlap, the adjustments to a theoretically sufficient base, the adjustments demanded by overenrollments and underenrollments, and the subtraction of nonrecurring items allowed in prior budget requests.

The "balancing" of institutional requests occurred in adjustments to a theoretical base--calculations designed to test the 1967-69 instructional funding level's appropriateness as a base for the 1969-71 budget. The calculation ran as follows:

> The 1966-67 cost study was adjusted to take into consideration the funds appropriated for increased enrollment and for certain adjustments to the base carried forward from 1967-69. The 1966-67 weighted average cost for each level of instruction was multiplied by the projected 1968-69 credit hour production. This product was compared with the amount budgeted for the 1968-69 projected enrollment at a 1966-67 cost level exclusive of funds budgeted for new programs and program improvements. If [the] amount budgeted for 1968-69 enrollment exceeded the product of weighted average costs times credit hour production the institution was theoretically over-budgeted. If it was less than the product, the base was theoretically deficient. Institutions deficient by more than 5 percent received one-half the deficiency over 5 percent as an addition to the base budget.

Except for campuses considered to be 'developing' (Chicago Circle, Edwardsville, Northeastern and Chicago State) institutions showing averages of more than 5 percent deducted one-half the excess over 5 percent from the base budget.[8]

Adjustments for underenrollments and overenrollments followed procedures adopted during the 1967-69 budget preparation process. Institutions were underenrolled if the total actual credit hours for the 1967-69 biennium multiplied by the weighted average cost was less than the projected credit hour production multiplied by the weighted average cost. Institutions underenrolled by more than three percent were not permitted an increased enrollment increment for 1969-71 in excess of the three percent average.

The formula for Increased Enrollments was the same as for the 1967-69 biennium: student credit hour production by level was projected for 1968-69, 1969-70 and 1970-71 and increases by level for each year of the new biennium were multiplied by the institution's weighted average cost by level.

Salary increases for academic personnel were generated using the same methodology as in the 1967-69 biennium. Merit increases based on projected student credit hour production by level of student were added to an overall salary step of four percent of the academic base (1968-69 academic salaries). Funds for merit increases were generated as follows: $200 for each 484 lower-division student credit hours; $300 for each 360 upper-division student credit hours; $400 for each 212 Graduate I hours; $600 for each 152 Graduate II hours; $300 for each academic staff member budgeted full-time to the laboratory school; and $400 for each academic staff member (except graduate and research assistants) budgeted full-time in library, public service, organized research, and administration.[9]

The formula for the funding of new instructional programs was a revised version of the 1967-69 formula. This new-program formula distinguished

between three stages of new program evolution: planning stage, initiation stage, and development stage. Funds made available for programs in the planning stage were limited to not more than two years and to direct salary costs. Requests for funds for the initiation and development phases of new programs were for resources not provided by the increased enrollment formula. (That is, the amount requested was the difference between the total projected staff salary costs for the program for each year of the 1969-71 biennium and the increased enrollment formula with cost data from the appropriate subject-matter area.) Fifty percent of the new-program funding above and beyond that generated by the increased enrollment formula had to come from the reallocation of resources within the institution--this condition was included to silence criticisms that the formula was too rich. New programs were expected to be self-sufficient within six years after funding was first provided. In general, funding for initiation and development phases was intended for the higher-cost graduate and professional programs and not for undergraduate programs.[10] Requests for the improvement or expansion of existing programs were to be submitted and reviewed according to the same procedures as the requests for new programs.

1971-72 FISCAL YEAR

For FY 1971-72 the IBHE staff employed a modified version of the familiar unit-cost formula, one that represented a transitional step between the formulas used since 1967 and a "program-oriented approach" planned for FY 1972-73. One change in methodology was the exclusion of the "base-deficiency" calculations whereby an institution's budget base was compared with a theoretical norm and was supplemented or diminished if the difference between actual and theoretical budget base were too large. In dollar terms the elimination of the deficiency factor probably had only a small impact, however, because in the original 1969-71 biennial budget review only one institution (Western Illinois

University) was recommended for an increase adjustment, and one institution (Northeastern Illinois State) was recommended for a minor decrease in the FY 1968-69 base funding level.[11]

The most significant procedural change in the budget request process was an adjustment for increased efficiency. The IBHE staff believed that some improvement in efficiency was possible in several phases of institutional operation, including the instructional and organized research components and the operation and maintenance of the physical plant. Consequently, institutions were requested to include the effect of improved efficiency in their appropriation requests.[12] Secondly, rates for salary increases for FY 1971-72 were lower than for FY 1970-71. The step increase for FY 1971-72 was 4.4 percent of the academic salary base for 1970-71 as compared with a five percent step for 1970-71. Moreover, the merit increase factors for FY 1971-72 were 15 to 20 percent less than the FY 1970-71 rates, depending on level of student.[13] Finally, the IBHE staff adopted a budget request format which, in general, attempted to make selected areas of the operating budget available for indepth review.

1972-73 FISCAL YEAR

The FY 1972-73 versions of the budgetary formulas closely resembled their predecessors with two expections: increased enrollments were financed using a leaner funding base and institutions were requested to indicate by "cost center" the actual expenditures made for FY 1969-70 and FY 1970-71, the budgeted amounts for FY 1971-72, and plans for FY 1972-73. For a number of years, the IBHE staff and institutions had been studying the problem of presenting budget requests within a format characterized as a "program approach to budgeting." What had evolved from the IBHE staff, over the objections of several institutions, was the "cost center concept." While institutions still

submitted operating appropriation requests generated on a basis of broad functions to be funded (e.g., instruction, organized research), institutions were required to show how they would allocate internally the requests if the total amount were appropriated. The IBHE staff had also proposed that the institutions be required to map their allocations for several levels--97 percent, 95 percent, etc.--less than full funding, but the plan was opposed by Holderman, executive director of the IBHE. The final plan drew heavy criticism from both the University of Illinois and Southern Illinois University, whose officials complained that they could not know how they were going to spend their money before they knew how much was going to be appropriated. In fact, the institutions were reluctant to permit an allocation to go out to a department in advance of the appropriation because it reduced the central administration's flexibility to adapt to changing conditions. The same fierce determination to retain as much flexibility as possible had led the institutions to resist the state central computerization of the annual cost study because a centralized process would have made data comparison easier.

The leaner funding of enrollment increases was controlled by using data from annual cost studies for 1966-67 through 1969-70 instead of only the 1969-70 cost data base. As a base, the 1969-70 funding for semester credit hours was determined by multiplying the 1969-70 cost study semester credit hours, by level, times the 1969-70 institutionally reported instructional credit hour cost. For the costs of increased enrollments between 1969-70 and 1972-73, however, the weighted average costs for the years 1966-67 through 1968-69 (instead of the weighted average costs for 1969-70 alone) were used in the calculations.[14] Naturally, the earlier costs were lower than more recent costs and resulted in a lower increased enrollment funding adjustment for FY 1972-73 than had been used in previous years.

FOOTNOTES

Appendix B

[1] State of Illinois, Board of Higher Education, Report No. 10 of the Executive Director, December 20, 1962, p. 79.

[2] Ibid.

[3] Layzell, T.D. "Budget Review Procedures of the Illinois Board of Higher Education, 1962-68" (unpublished MA thesis, University of Illinois, Urbana, Illinois, 1972), p. 83; State of Illinois, Board of Higher Education, Executive Director's Report No. 52, January 11, 1967, pp. 350-354.

[4] Layzell, p. 86.

[5] Ibid., p. 87.

[6] State of Illinois, Board of Higher Education, Executive Director's Report No. 52, January 11, 1967, p. 354.

[7] Layzell, "Budget Review Procedures of the Illinois Board of Higher Education, 1962-68," p. 108.

[8] Ibid., pp. 108-109. Original source: Illinois Board of Higher Education, Instructions for Formulation of Operating Budget Requests for 1969-71 (Revised July 30, 1968), pp. 2-3.

[9] Ibid., pp. 109-110. Original source: Illinois Board of Higher Education, Instructions for Formulation of Operating Budget Requests for 1969-71 (Revised July 30, 1968), pp. 11-14.

[10] Ibid., p. 113. The calculation of staff needs was as follows: "Staff needs for the new programs were to be based on the statewide staffing ratio (average annual credit hours per FTE staff for the disciplinary area) at the departmental level. This information was available in the Board's 1967 Faculty

Load Study. Salary requirements were determined by multiplying the staff needs by the institutional average salary by rank for the previous fall as adjusted for salary increases. For upper division and graduate program requests, institutions were to use the average Associate Professor salary to determine salary requirements" (pp. 113-114).

[11] State of Illinois, Board of Higher Education, Executive Director's Report #71: Operating Budget Requests for 1969-71 Biennium, December 2, 1968, p. 618.

[12] State of Illinois, Board of Higher Education, Procedures for the Development and Submission of Operating Appropriation Requests for 1971-72, September 3, 1970, p. II-1.

[13] Ibid., p. III-23.

[14] State of Illinois, Board of Higher Education, Instructions for Submitting 1972-73 Operating Appropriation Requests, June 25, 1971, pp. 3, 8-9.

Appendix C:
The Technical Evolution of Instructional Formulas in Texas: Some Highlights

TEXAS HIGHER EDUCATION OPERATING BUDGETS: EDUCATIONAL AND GENERAL FUNCTIONS

Since 1959 the Texas higher education operating budgets have identified the following educational and general functions:

- General Administration and Student Services
- General Institutional Expense
- Staff Benefits (added in 1970)
- Resident Instruction
  - Faculty Salaries
  - Departmental Operating Expense
  - Instructional Administration
  - Organized Activities
- Vocational Teacher Training Supplement
- Library
- Organized Research

Extension and Public Service

Physical Plant Operation and Maintenance

- Physical Plant General Services
- Building Maintenance
- Custodial Services
- Grounds Maintenance
- Utilities
- Campus Security (added in 1970)

Special Items

Major Repairs and Rehabilitations[1]

THE FACULTY SALARIES FORMULA, 1965-67 BIENNIUM

The Texas Faculty Salaries Formula for the 1965-67 biennium is outlined in Tables C-1 and C-2.

Table C-1

State of Texas Faculty Salaries Formula, Fiscal Year 1966

Program	Rate Per Semester Credit Hour			
	Under-graduate	Masters	Doctoral	Special Professional
Liberal Arts	$13.82	$36.81	$139.62	
Science	15.08	66.55	200.43	
Fine Arts	25.20	57.86	181.43	
Teacher Education	12.29	31.25	120.87	
Teacher Education (Practice Teaching)	29.88			
Agriculture	17.25	48.59	167.58	
Engineering	24.68	68.63	200.43	
Home Economics	17.76	43.43	133.06	
Law				$23.01
Social Service	21.83	66.55		
Library Science	15.03	46.01		
Veterinary Medicine			167.58	43.02
Vocational Training	13.14			
Physical Training	12.24			
Nursing	30.78	52.70		
Pharmacy	23.68	56.16	174.53	
Business Administration	13.78	38.88	181.43	
Optometry	17.09			

Source: State of Texas, Coordinating Board, Texas College and University System, Annual Report of the Coordinating Board, Texas College and University System, to the Honorable John Connally, Governor of Texas, and The Legislature of the State of Texas, December 31, 1965, p. 88.

Table C-2

State of Texas Faculty Salaries Formula, Fiscal Year 1967

Program	Rate Per Semester Credit Hour			
	Under-graduate	Masters	Doctoral	Special Professional
Liberal Arts	$14.51	$38.65	$146.60	
Science	15.83	69.88	210.45	
Fine Arts	26.46	60.75	190.50	
Teacher Education	12.90	32.81	126.91	
Teacher Education (Practice Teaching)	31.37			
Agriculture	18.11	51.02	175.96	
Engineering	25.91	72.06	210.45	
Home Economics	18.65	45.60	139.71	
Law				$24.16
Social Service	22.97	69.88		
Library Science	15.78	48.31		
Veterinary Medicine			175.96	45.17
Vocational Training	13.80			
Physical Training	12.85			
Nursing	32.32	55.34		
Pharmacy	24.86	58.97	183.26	
Business Administration	14.47	40.82	190.50	
Optometry	17.94			

Source: State of Texas, Coordinating Board, Texas College and University System, Annual Report of the Coordinating Board, Texas College and University System, to The Honorable John Connally, Governor of Texas, and The Legislature of the State of Texas, December 31, 1965, p. 89.

FACULTY SALARIES FORMULA, 1971-73 BIENNIUM

The productivity adjustments made in the Faculty Salaries Formula for the 1971-73 biennium by the Faculty Salaries Formula Study Committee are shown in Tables C-3 and C-4.

Table C-3

Comparison of Student-Faculty Ratios in the 1969-71 Formula for Faculty Salaries with Ratios in the Recommended Formula for the 1971-73 Biennium[2]

(Undergraduate)

Program	Student-Faculty Ratios		Increase in Productivity	
	1969-71 Biennium	1971-73 Biennium	# of Additional Students Per Faculty Member	Percentage Increase
Liberal Arts	19:1	24:1	5	26.3%
Science	19:1	23:1	4	21.1
Fine Arts	10:1	12:1	2	20.0
Teacher Education	19:1	24:1	5	26.3
Teacher Education--Practice Teaching	9:1	11:1	2	22.2
Agriculture	16:1	17:1	1	6.3
Engineering	12:1	15:1	3	25.0
Home Economics	14:1	17:1	3	21.4
Social Service	12:1	17:1	5	41.6
Library Science	18:1	21:1	3	16.7
Vocational Training	18:1	20:1	2	11.1
Physical Training	19:1	22:1	3	15.8
Nursing	7:1	8:1	1	14.3
Pharmacy	12:1	14:1	2	16.7
Business Administration	19:1	24:1	5	26.3
Technology	--	15:1	-	--

Table C-4

Comparison of Student-Faculty Ratios in the 1969-71 Formula for Faculty Salaries with Ratios in the Recommended Formula for the 1971-73 Biennium[3]

(Graduate)

Masters & Special Professional Program	Student-Faculty Ratios		Increase in Productivity	
	1969-71 Biennium	1971-73 Biennium	# of Additional Students Per Faculty Member	Percentage Increase
Liberal Arts	10:1	13:1	3	30.0%
Science	6:1	8:1	2	33.3
Fine Arts	6:1	8:1	2	33.3
Teacher Education	10:1	15:1	5	50.0
Agriculture	8:1	9:1	1	12.5
Engineering	6:1	8:1	2	33.3
Home Economics	8:1	11:1	3	37.5
Law	25:1	30:1	5	20.0
Social Service	6:1	8:1	2	33.3
Library Science	8:1	11:1	3	37.5
Veterinary Medicine	6:1	6:1	-	--
Nursing	6:1	7:1	1	16.7
Pharmacy	6:1	8:1	2	33.3
Business Administration	10:1	13:1	3	30.0
Optometry	10:1	10:1	-	--
Doctoral Program				
Liberal Arts	5:1	6:1	1	20.0%
Science	4:1	5:1	1	25.0
Fine Arts	4:1	4:1	-	--
Teacher Education	5:1	7:1	2	40.0
Agriculture	4:1	5:1	1	25.0
Engineering	4:1	5:1	1	25.0
Home Economics	4:1	6:1	2	50.0
Veterinary Medicine	4:1	4:1	-	--
Pharmacy	4:1	4:1	-	--
Business Administration	4:1	5:1	1	25.0

FOOTNOTES

Appendix C

[1] State of Texas, Coordinating Board, Texas College and University System, Establishment of Formulas and Definitions of the Elements of Institutional Cost. Report of the Special Study Committee on Finance, Facilities, and Administrative Services, February 14, 1966, p. 2.

[2] Coordinating Board, Texas College and University System, Designation of Formulas, Policy Paper 9, June 1970, p. 10.

[3] Ibid., p. 11.

[4] Ibid.

Appendix D:

The Maximum Intrinsic Ratio (MIR) Internal Allocation Formula—California State University, Hayward

An approach labeled "Maximum Intrinsic Ratio" (MIR) has and will continue to be analyzed by the Associate Deans of each of the schools and the Committee on Academic Resources. The general approach is to compare the actual student-faculty ratio of a given program to a theoretical student-faculty ratio which would be generated if all classes for the program were enrolled to the Staffing Formula breaking point.*

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* The MIR approach does not depend on the breaking point concept of the old Staffing Formula. Only a definition of maximum class enrollments is required. Variations from the old limits have been proposed and approved when based both on sound curricular and budgetary considerations. However, until the university can obtain faculty positions under the program budgetary type of condition that the old Staffing Formula allowed for, course additions and/or class sizes are involved. Current policy dictates that the school MIRs shall not decline below their current levels until budgetary relief is forthcoming from the state.

Source of Appendix: California State University, Hayward, memorandum. SUBJECT: CURRENT AND FUTURE PROBLEMS WITH FACULTY BUDGETS AND THE DEVELOPMENT OF THE MAXIMUM INTRINSIC RATIO CONCEPT. Dated January 10, 1973. (The appendix is a direct quotation of a portion of the memorandum.)

For example, a department offering only C2 courses (breaking point enrollment of 50) would have a ratio of 40 FTE per faculty position (12 wtu/15sc + .80, .80 x 50 = 40 FTE), whereas one offering only C4 courses would have a maximum possible ratio of 24:1. Another program having offerings of equal numbers of C2 and C4 classes would be 32:1 or the midpoint between the C2 and C4 maximums. The derived ratio can be assumed for a given quarter to reflect intrinsic cost of the program in speaking of the potential faculty contact with the numbers of students and generation of student units. Stated differently, a maximum ratio can be derived from the mix of courses by using their average weighted capacity of maximum enrolled students per course. It is obvious that the Maximum Intrinsic Ratio may fluctuate to a certain extent from quarter to quarter. The primary use of the Maximum Intrinsic Ratio is to develop a suggested measure for the allocation of faculty for the approaching academic year (Table D-1).

Table D-1

Suggested Allocation of Faculty Using MIR - Hypothetical

Dept.	Program (courses)	MIR (12/15 x class cap.)	Actual Ratio Target*	Projected FTE	Faculty Positions Suggested for Next Academic Year (FTE/Target Ratio)
A	C-2 courses only	40/1	32/1	300	9.4
B	C-4 courses only	24/1	19.2/1	200	10.4

* Assume 80.5 percent of seats in all classes must be filled on the average in order to attain the budgeted FTE. A uniform percentage target for all departments may not be desirable. However, targets less than 80.5 percent for some programs must be balanced with realistic increases for others if the university-wide FTE is to be attained. Here, curricular and instructional considerations can change norms, even against a stringent budgetary backdrop.

In this hypothetical example, the target ratio (80.5 percent of MIR) of a current academic year is compared to the actual student-faculty ratios produced by enrollments. The comparison of the actual ratio with the target ratio measures the need for faculty. For example, as previously stated, if we had attained our budgeted FTE, 80.5 percent of all seats in all classes would have enrolled students, and if this percent were uniform for all programs, all would have an actual student-faculty ratio that would be exactly 80.5 percent of the Maximum Intrinsic Ratio (the target). On the other hand, assuming identical growth rates, departments that exceed the 80.5 percent norm would appear to require more faculty than those not attaining 80.5 percent.

An additional analysis has been made of the relative demand for courses having diffeeing staffing formula classifications with the view to the possibility that an equivalency factor may be developed to better insure equitable faculty allocations. The need for the analysis came from an observation that C4 courses taken as a group always attain a higher percentage of the Maximum Intrinsic Ratio than do C2 courses. The reason for this difference is not apparent at this time, although one speculation might be that a somewhat constant number of students attempt to enroll in most courses resulting in an automatic higher attainment of the C4 MIR, which is 24/1, than for the C2 MIR (40/1). A higher percentage attainment of MIR as the MIR ratio decreases was for the most part substantiated by further analysis. All C2, C4, C5, and C16 courses were included in the analysis and represented 82 percent of all regular courses offered in the fall quarter of 1972.

These differential targets will be incorporated in the suggested faculty allocation for 1973-74. This is consistent with the notion that a high cost of a program (Low MIR) should attain a higher percentage of its MIR than a low cost program (High MIR). It should be noted also that so-called low cost programs have a greater ability to absorb student FTE when available than do high cost programs.

What impact and advantages does this new approach have over the old approach labeled Apparent Staffing Need (ASN)? First, the criteria embodied in the old Staffing Formula used to develop ASN will be compared to the general criteria in the proposed new approach (Maximum Intrinsic Ratio). Of the three criteria, only the first one . . . is substantially changed. That is, the same FTE growth factor and breaking-point concept are used in both approaches; and courses in several departments having a few majors are immunized against the analysis and the faculty required to maintain or begin an essential program will be allocated separately. The essence of the change is to eliminate the minimum limits of 13, 10, and 5 as far as the analysis is concerned (please note 13, 10, and 5 is still at this time a systemwide norm) and replace it with actual student enrollments. As a mathematical measure, actual enrollments present a much finer gradation or spread of values, say 1 through 50 for C2 courses, then either a 13 or a 10. As previously stated, the loss of the old Staffing Formula, decreasing support budgets, increasing the overall student-faculty ratio (packing of more students into individual classes) requires a more sensitive way of viewing faculty allocations. With hindsight we can relate that if this new approach had been used and accepted in allocating for 1972-73 instead of ASN, the allocation would have better anticipated the shift in student interest towards professional programs, a trend which, as earlier stated, began in 1975.

The new analysis has helped to illuminate and sharpen the difficulties in an institution given an arbitrary, high student-faculty ratio at a time when students are shifting their attention from liberal arts towards professional programs. Although the relative merits of the two approaches or any other approach that may be proposed will be tested on a continuing basis, no allocation based entirely on a mathematical analysis can be completely rational or just, for the production of FTEs is not an end in itself. In this regard, as in the past, the schools will modify a formula allocation to them when overriding curricular and personnel issues arise.

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